

# THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. 84.

NEW YORK, SATURDAY, MARCH 5, 1904.

NO. 10.

## ORIGINAL ARTICLES.

### THE PATHOLOGICAL ANATOMY OF SHIGA BACILLUS INFECTION OF THE INTESTINES IN INFANTS.

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THE bacillus of dysentery (Shiga) first proved by Shiga<sup>1</sup> to be the cause of the epidemic dysentery of Japan, has been shown by the work of Flexner, Kruse, Müller, Drycke and others to stand in direct causal relation to the dysenteries epidemic, endemic and sporadic of the tropical and temperate zones, and its etiological importance is now universally recognized.

The pathological lesions in adults induced by infection with this bacillus were briefly stated by Shiga<sup>2</sup> to be more superficial than those caused by the *Amæba coli*, and he noticed that while the mesenteric glands were regularly enlarged the spleen, unless some complication was present, was unaffected.

Flexner<sup>3</sup> reports briefly the autopsies of three cases in Manila, the lesions consisting in swelling, congestion, and hemorrhage into the mucous membrane with slight exudation on to the surface in one case and very small ulcerations in another. He states that histologically "the changes appear in the mucous membrane, submucosa and muscularis, being most marked in the former situations. Those of the mucous membrane consist of coagulative necrosis with exudation of fibrin and polymorphonuclear cells. . . . The pseudomembrane is a close-meshed network of fibrin enclosing multinuclear, often fragmented cells. . . . The submucosa is always much altered. . . . Here are found hemorrhages of variable size, while in the interstices of the tissue, some fibrin appears. More marked, however, are cellular accumulations which are present, not uniformly, but in irregular areas. . . . The character of the cellular exudate is quite uniform. Excluding the red blood cells the new cells consist chiefly of plasma cells. . . . In the submucosa, infiltration, hemorrhage and fibrin formation take place also beneath an intact or almost intact mucous membrane. . . . The muscular coat shows only hemorrhages. . . . The peritoneal tunic is usually unaltered."

He emphasizes the fact that the polymorphonuclear leucocytes play a very insignificant rôle in the process of infiltration of the submucosa, whereas in the affected mucous membrane they are much in evidence. The bacteria were abundant in the fibrinous exudation on the mucous membrane and in the necrotic tissue; he could not find them in the unaffected tissue and

believed the changes in the submucosa to be toxic in origin.

Strong and Musgrave<sup>4</sup> give a summary of the changes observed in many autopsies performed by them in Manila. They found the changes mostly in the large intestine but extending usually for a variable distance into the ileum. The whole wall of the intestine was thickened. The superficial part of the mucosa was necrotic and usually hemorrhages were found beneath this. The solitary follicles were swollen and red. In the very acute cases no definite ulceration was observed but only a general superficial necrosis of the mucosa. Microscopically there was necrosis of the mucous membrane with distension of the blood vessels and extravasation of blood. An extensive cellular infiltration of the mucosa was the rule and there were hemorrhages into the submucosa and edema of the same. Plasma cells were increased especially around the blood vessels. Edema was found even in the muscular coats. The mesenteric glands were uniformly much enlarged. Bacilli of typhoid colon form and staining properties were found in the mucosa, and cocci often mixed with them and though the latter were only superficially situated the bacilli were found sometimes not only in the mucosa but all through the areolar tissue, the muscularis mucosæ and submucosa down to the muscular coats. In the other organs were no constant changes. No mention is made of fibrin.

Duval and Bassett<sup>5</sup> in a preliminary paper first pointed out the relationship between the *Bacillus dysenteriae* (Shiga) and the summer diarrheas of infants. They reported 42 positive cases.

Wollstein<sup>6</sup> reports the finding of the bacilli in 39 cases of infantile diarrhea occurring during the winter months out of 114 studied, but many of the negative cases were normal children and in all cases having blood and mucus in the stools the bacilli were present.

Numerous other cases in addition have been reported and the *Bacillus dysenteriae* (Shiga) is now generally accepted as the cause of the majority of the various forms of diarrhea in children.

The apparent discrepancies in the different types of cultures obtained from various sources have partly disappeared in the light of the observations of Martini<sup>7</sup> and Lenz<sup>8</sup> who showed by reactions and cultural characteristics that there are at least two types of this organism known to us as the true Shiga (not fermenting mannite) and the Harris or Flexner-Manila (fermenting mannite). The latter of these is the type chiefly found connected with infantile diarrhea in New York, according to Wollstein, only one of her positive cases being of the true Shiga type.

Gay and Duval<sup>9</sup> have recently reported three cases in adults in which both types of the organism were found, in one case the acid or Harris type predominating, in another the alkaline or true Shiga type predominating and in a third the number of positive tubes being approximately the same. No cases of double infection in infants have as yet been reported. (This statement was true at the time that this was written but since then at least six cases of double infection in infants have been found.)

The autopsies whose findings I wish to report took place at the New York Foundling Hospital, the Babies' Hospital and the Nursery and Child's Hospital. The organism was proved to be present in the great majority of cases by an examination of the stools but in seven cases it was obtained post mortem by scraping the mucous membrane of the colon and in three cases it was obtained both ante mortem and post mortem.

The organisms found in all these cases corresponded in all particulars to the type known as the "acid" or "Harris" or "Flexner-Manila" organism, that is, it did not ferment glucose, saccharose or lactose but did split mannite with acid formation. It produced an early acidity in milk with a subsequent alkalinity and agglutinated with the "Harris" serum in high dilutions.

The autopsies were obtained as soon as possible after death the pieces of the organs placed in equal parts of 95 per cent. alcohol and 10 per cent. formalin. After from one to three days they were transferred to alcohol and mounted and cut in paraffin. The staining was done with hæmalaun and eosin, sections for bacteria were stained by the Gram-Weigert method and for those negative to Gram with borax-blue and differentiated with one-half per cent. acetic acid. The Weigert stain for fibrin was used to demonstrate fibrin.

The first 17 cases were winter cases occurring between November 1 and April 15, and the last 15 summer cases between May 1 and September 1. There seems to be no difference in the histological findings due to the time of year. From a study of these cases it seems that they fall with considerable accuracy into several different groups, according to the histological findings and with the description of each group I report a typical case.

Group A comprises five cases and represents the most severe changes met with which are more like those found by Flexner and Strong in the adult dysenteries of Manila than any I have to report. The following is a well-marked case:

*Case I.*—T. W., five months old; was admitted to hospital suffering from intestinal indigestion. During the first month he improved very much and gained some weight, then got up diarrhea and began to lose weight. A day or two afterward, the first trace of blood appeared in the stools, only small in amount, but coincident with this, a rise in temperature from 99° to 103° F., and it remained high, sometimes up to 104° F., till his death eight days later. Stools toward the

last showed no blood whatever, but were yellowish-green with some mucus. Toward the end there was considerable abdominal rigidity and tympanites. The *Bacillus dysenteriae* was obtained by culture from scrapings of the intestinal mucosa.

*Autopsy.*—Liver greatly congested with fatty infiltration; kidneys congested and degenerated; spleen congested; hypostatic pneumonia in both lungs; peritoneal cavity contained cloudy serum. Between the loops of intestine there are some delicate bits of fibrin. There is no marked injection of the vessels and the peritoneum has lost only in part its normal shining appearance. Stomach normal. Small intestine appears normal except for slight swelling of Peyer's patches and solitary follicles. Large intestine shows extensive changes, more marked at the lower end. The wall of the sigmoid and rectum is very much thickened. In the cecum the mucous membrane has lost its normal smooth appearance interspersed with granular areas and marked congestion. In the sigmoid and rectum the mucous membrane is covered with a grayish pseudomembrane that strips off with difficulty, taking with it all structures down to the very much thickened submucosa. Mesenteric glands moderately swollen and congested.

*Microscopical.* The surface epithelium of the small intestine is partially denuded. The mucous membrane excepting Peyer's patches is apparently normal. Peyer's patches are moderately swollen; there being a moderate hyperplasia of the lymphoid cells only. No necrosis of cells. Submucosa and muscularis normal. Sections of the large intestine show a diffuse necrosis of the mucosa varying in intensity, in some places only the superficial edge is necrotic in other places the necrosis extends through the entire depth and as far as the muscularis mucosæ. All the parts of the mucosa are affected though the Lieberkühnian glands suffer especially. The blood vessels are either injected or closed by means of pink thrombi. These thrombi show little or no fibrin and would appear to be made up of coalesced red blood corpuscles. The surface is not covered with a definite membrane, the necrotic tissue adheres to the subjacent living tissues in general, occasionally it is lifted up and gives the impression of being a pseudomembrane. At the line of junction of the living and dead tissue there is an invasion of the latter by polymorphonuclear cells and there is a general increase of the cells in the mucosa. Nuclear fragmentation is not abundant. The solitary follicles show a somewhat more marked hyperplasia than in the small intestine, the centers showing endothelial proliferation. The mucosa is deficient over the follicles. The submucosa is edematous and contains a greatly increased number of mononuclear cells with eccentric nuclei some of which are plasma cells. The muscular coat except for the fibrous septa which show an increased number of mononuclear cells is normal. There is a massive bacterial development in the necrotic mucosa.



and extension of bacteria a certain distance into the adjacent living mucosa. The bacteria consist of forms staining with Gram and decolorizing by Gram; among these are cocci and innumerable bacilli. The invading organisms also consist of cocci and bacilli among which are forms having the colon-typhoid morphology. Cultures from this case gave colon bacilli from the peritoneum and all the organs while, in addition, the *Bacillus dysenteriae* was obtained from the intestinal contents.

In these cases the change is a pseudomembranous one though the membrane is by no means continuous but of irregular distribution; in two cases however, it is very extensive. This pseudomembrane is composed chiefly of necrotic tissue, desquamated cells and countless bacteria. Fibrin plays in it a very small part, two of the cases and those the most intense showing none at all. There is necrosis of the mucosa in all these cases and it is this which chiefly gives the appearance of a false membrane but the necrosis does not extend beyond this coat. In this necrotic tissue and at its border there are hemorrhages and thromboses and it is divided from the healthy tissue by a zone of mono- and polynuclear cell infiltration.

The submucosa in four of the cases of this group is much affected, it is swollen both from edema and from cellular infiltration. This infiltration is composed of mononuclear cells many with the eccentric nuclei characteristic of Unna's plasma cells and is found most marked about the blood vessels. The submucosa in the fifth case is unaffected. The muscular coat is spared except for a slight mononuclear cell infiltration along the fibrous septa in one case and the peritoneal coat is normal save in the case of peritonitis.

It is interesting to note in this connection that though such cases in adults run as a rule very acute courses one of these children lived eighteen and two, twenty-one days after the bacillus was isolated from the stools while the other cases survived only six and eight days after the stools contained mucus or blood.

Two cases were so called "terminal infections" occurring in nephritis and measles respectively, the latter being also complicated by an intercurrent diphtheria.

In Group B, comprising four cases, we find a different picture. Here the mucous membrane in both small and large intestines is in general in a good state of preservation, it is the lymphoid elements that suffer. The following is a characteristic case:

Case II.—B. F., age nine months, twenty-seven days, brought to the hospital in bad condition with diarrhea and without any accurate previous history. Was very emaciated, had meningeal symptoms, stiff neck, irregular pupils and internal strabismus. Stools most of the time were yellow occasionally green with a trace of blood, two to five a day. Temperature at first below 100° F., rising irregularly till death at 104°. The bacillus of dysentery was isolated three days

before death. Length of illness in hospital, fourteen days.

*Autopsy.*—A very much emaciated child; lungs edematous; liver very fatty; stomach normal; upper part of small intestine normal. In the lower two feet the Peyer's patches are enlarged with small superficial ulcerations over them and the mucous membrane appears a little thickened. In the large intestines there is congestion most marked in the neighborhood of the ileocecal valve. The solitary follicles are dimpled. The changes are slight in the descending colon and sigmoid. The mesenteric glands are slightly enlarged.

*Microscopical.* Small intestine. General mucosa shows little alteration. As the confines of the swollen lymphoid nodules are approached the villi are swollen and rendered more obtuse by an increase of the lymphoid cells. The lymphoid masses are markedly enlarged, the new cells being of the lymphoid habitus. From the center of the mass there is a funnel-shaped depression in which the lymphoid cells often stain poorly and over which the mucosa is imperfect. The submucosa and muscle show no striking alteration. A. Colon: The mucous membrane of the large intestine shows in general no striking change but the solitary nodules are enlarged in a manner similar to that described in the small intestine and over them the epithelial layer is deficient. Bacteria of any form or staining properties are few in number.

In three cases, both small and large intestines were involved in the process, in the fourth only the colon. The change consists in a hyperplasia of the lymph follicles both agminated and solitary, and this hyperplasia is lymphoid in three of the cases and endothelioid in the fourth. The elements of these follicles show a tendency to invade the surrounding tissue. Over these follicles there is a deficiency of the epithelium and more or less excavation of the follicles themselves, causing the well known "dimpling." The submucosa was in all cases approximately normal nor did the muscular or peritoneal coats show any change.

The Case of Park and Carey,<sup>10</sup> the only autopsy in an infant suffering from undoubted Shiga infection that I have been able to find reported up to this time, evidently belongs to this group the lesions being chiefly in the solitary follicles. Of this group three of the cases were known to have been ill for fourteen days or over and the fourth had diarrhea for only five days but before this his stools were green and rather numerous and had not been examined so that it is possible that the bacillus was present for a longer time. These changes are what one would expect in subacute cases with a more delayed termination and as mentioned above this is true of three of the cases at least and possibly of the fourth.

Group C includes those cases characterized by superficial necrosis and ulceration in the mucous membrane not limited to the follicles as in Group B, and not accompanied by the formation of a pseudomembrane as in Group A. Of this group

there are five examples. One of these is as follows:

*Case III.*—J. S., seven months twenty-four days; a well-nourished child began to be ill acutely with temperature 103° F. rising in twenty-four hours to 104.5° F. Stools at first brown and loose two to four a day. The temperature then dropped to normal and after three days stools were normal for twenty-four hours. Following this a rise of temperature to 103° F. and stools became frequent and green with mucus and blood. Death five days later despite the injection of 10 c.c. of "Harris" and 10 c.c. of "Seward" serum. Temperature for the last three days 100° to 102° F. The Shiga organism was isolated from the stools five days before death and was also found post mortem from the scrapings of the mucous membrane of the colon.

*Autopsy.*—Slight congestion in the lower lobes of lungs; liver fatty; spleen small and firm; stomach normal; lower six inches of small intestine were slightly congested; the large intestine was congested and in places there were small hemorrhages into the mucosa. The mucous membrane, especially near the ileocecal valve presented very small superficial yellowish areas of apparent necrosis.

Microscopically, the small intestine was practically normal; the large intestine, throughout its whole extent presented congestion, in the sections from the neighborhood of the ileocecal valve the blood vessels of the mucosa and submucosa were enormously dilated, in the former situation there were actual hemorrhages. There were small areas near the hemorrhages whose cells stained poorly and there was actual, although superficial, loss of substance. There was considerable inflammatory reaction around these areas. The submucosa was much infiltrated with mononuclear cells, especially in the superficial portion. The muscularis was normal. In other parts of the colon the pathological changes were less marked.

Bacteria: Cocci and bacilli positive and negative to Gram were found in great numbers in the neighborhood of the necrotic portions. No especial type seemed to predominate.

The changes in these cases consist in congestion and hemorrhage into the mucosa with necrosis of isolated portions of the mucous membrane which necrotic portion may be exfoliated so as to form ulcerations on the surface. The necrotic area and ulcerations are usually surrounded by a zone of inflammatory reaction. The lymphatic tissue shows more or less participation in the process. The submucosa escapes with the exception of one case where it shows a cellular infiltration. The other coats are unaffected.

Two of these cases were very acute, lasting but two and eight days respectively while the others ran a course of about two weeks.

The Group D, embracing those cases that show microscopically but few discoverable lesions, is a large one, numbering 14 cases. The following is a typical case:

*Case IV.*—J. W., two months old; admitted to hospital March 25 with pneumonia. Died April 3. He had one to three yellow and green stools a day, no mucus and no blood. Temperature before death for two days 98°-100° F. Five days before death no Shiga bacilli; two days before death the bacilli were isolated.

*Autopsy.*—Lungs typical and very marked bronchopneumonia; spleen was large, dark-red and soft; liver and kidneys were degenerated; stomach normal. Small intestine.—There were congested Peyer's patches and the solitary follicles were pigmented and presented typical "shaven-beard" appearance most marked low down. The large intestine was slightly congested and the follicles prominent.

*Microscopically:* Ileum.—The solitary follicles and Peyer's patches were a little enlarged from an increase of the lymphoid cells; except for this, the appearance was normal. Large intestine: The mucous membrane was in an excellent condition of preservation. The follicles were slightly swollen, but no other changes. Bacteria.—These are very few and very superficial. Spleen is much congested with hyperplasia of the pulp.

Several facts may contribute to account for the paucity of the pathological findings. I have not considered the loss of the superficial epithelium as a pathological lesion and have only regarded loss of substance as true and not an artifact when it has been surrounded by a definite reactionary zone. The autopsies in most of the cases unfortunately could not be obtained immediately after death as they should be to draw any conclusions from the condition of the superficial epithelium and loss of substance occurs so easily that in order not to arrive at any false conclusions this plan was adopted. It is possible that autopsies obtained a few minutes after death will allow of some deductions in regard to the epithelial coating.

Then, too, the microscope fails to help us very much in the vascular changes in the mucosa on account of the various procedures to which the tissue has to be subjected in the course of hardening and for this reason the macroscopic examination probably gives us a truer conception of the amount of congestion.

And lastly five cases of this group were terminal infections occurring in children suffering from serious and even fatal diseases and others were almost entirely in badly nourished institutional infants to whose marasmus the infection with the Shiga bacillus was terminal. The infection was of a comparatively short duration and their reaction undoubtedly poor. Beyond congestion, moderate hyperplasia of the lymphoid tissue and in one case a little cellular infiltration of the superficial portion of the submucosa there was very slight histological change.

One case presents lesions quite distinct from any of the others. The ulcerations were very deep and were in the process of repair, death being due to marasmus after all intestinal symptoms had ceased and the Shiga bacillus had disappeared.



from the stools, nor could it be found post mortem by scraping the mucosa.

The description of this case is as follows:

Case V.—J. R., fifteen months; had suffered for months previous from malnutrition and vomiting. Admitted at the age of ten months. Weight seven pounds and fifteen ounces. Improved slowly and one month later was taking food well and gaining in weight; then vomiting and loss of weight though the stools were normal. Three months after admission the stools became loose, four to six a day, no blood but later a little mucus and undigested food. This condition persisted for a long time and twenty-nine days after the beginning of the diarrhea the *Bacillus dysenteriae* (Shiga) was obtained from the stools. Two days later the bacillus was no longer found and at the autopsy three weeks later it could not be recovered by scraping the mucous membrane of the colon. The child failed constantly and died in a condition of extreme marasmus weighing but six pounds four ounces.

Autopsy.—Lungs congested; liver small and dark; spleen dark red, follicles prominent; stomach and duodenum normal; Jejunum shows two small ulcers; Ileum.—Peyer's patches slightly swollen and a few small ulcers were present in them. Colon.—Here were many ulcers extending through the mucosa and even down to the muscular coat but the peritoneal surface was quite smooth everywhere. The ulcers were irregularly oval or round with raised edges and were not limited to the solitary follicles which were not enlarged.

Microscopical: In the small intestine the ulcers are relatively superficial and involve the layer of the crypts but do not extend through the mucosa. The base consists of granulation tissue diffusely spread out extending beyond the limits of the ulcer and invading the adjacent mucous membrane, the crypts of which are widely separated and also invading at a distance the submucosa. The muscular coat escapes. In the large intestine the chief lesion is an ulcerative one affecting the mucous membrane and to a marked extent the submucosa. The ulcer is clear, the base of it consisting of granulation tissue in a state of advanced formation. The superficial edges of the ulcers present a reticulated appearance due to a superficial necrosis of the granulation tissue in which fibrin and degenerated mononuclear cells are contained. Where the glands were retained many had become dilated so as to form small cysts. The spleen is interesting in showing a marked endothelial transformation of the germinal centers of the Malpighian bodies. Bacteria.—Very few cocci and bacilli found on the surface of the ulcers as well as in the mucous membrane.

Two cases could not be classed with any of the groups owing to their unsatisfactory microscopical examinations while one case is worthy of special mention, though presenting practically no abnormal change on account of the fact that it was a case that had recovered completely from

the infection to fall a victim later to pneumonia.

From the foregoing it will be noticed that the severe cases are decidedly in the minority. The lesions occur with the greatest frequency in the mucosa of the colon and the lower few inches of the ileum, those in the colon being usually much more intense and extensive. The pseudomembrane in one case, however, is confined entirely to the small intestine, the ulcerations in one case were confined entirely to the small intestine, and one case, although only a little of the ileum was affected, showed its most intense process there. Though the submucosa is at times affected there is no considerable change in this unless the mucosa has suffered severely. Only in the most intense inflammations does the muscular coat show participation in the process and then very slightly while the peritoneum escapes, the case with general peritonitis being an exception.

As far as the other organs are concerned there were no characteristic findings. The mesenteric glands are usually somewhat enlarged, rarely markedly so, and grayish or pinkish. The lungs show hypostatic congestion and small areas of bronchopneumonia unless the Shiga infection is secondary to some more pronounced pulmonary lesion. The liver is fatty in about the same percentage as in other infantile conditions. The spleen is, ordinarily, unaffected but when some other infection is added presents the ordinary characteristics common in infectious diseases. The kidneys show, as a rule, cloudy swelling.

In eight cases cultures were made from all the organs at autopsy but in no case was the bacillus found except in the intestinal tract. The tubes from the organs when transplanted in small quantity, except the lungs where many different organisms were found, either remained sterile or showed a growth of colon bacilli. In one case the liver gave streptococci. This negative bacteriological finding is the characteristic one in adults though cases of a general blood infection are reported. The method advised by Flexner of plating considerable quantities of tissue by which he was able to demonstrate the presence of bacilli in the liver and mesenteric glands was not employed.

An examination for microorganisms gives no very definite results. An innumerable host of bacteria, cocci and bacilli, are present in the pseudomembrane and in the necrotic tissues; in the center of these masses they were about equally distributed, but one receives the impression that, in the tissue surrounding the bacilli of the colontyphoid morphology and staining properties predominate, but it is of course impossible to say that these are all Shiga bacilli. In the milder grades of inflammation the organisms of any kind are few in number, very superficially situated and no particular type predominates. In this series of cases the organisms invaded the submucosa in only one case.

In an examination for bacteria in the sections, my findings agree more nearly with those of

Flexner<sup>3</sup> in adult cases, who found a general admixture of organisms on the surface of and in the mucosa with a submucosa uninvaded, rather than with those of Strong and Musgrave<sup>4</sup> who found organisms not only in the mucosa but all through the areolar tissue, muscularis mucosae and submucosa down to the muscular coat.

It is interesting at this time to compare somewhat in detail the pathological findings in these cases with those observed by Flexner,<sup>3</sup> and Strong and Musgrave<sup>4</sup> in Manila, the specific germ being the same. When we do this we find that only one of these groups (A) is comparable in any way with their cases though this bears many striking resemblances to the Manila cases. There is a pseudomembrane composed of necrotic tissue, emigrated and desquamated cells and myriads of bacteria. Flexner lays great stress on the fibrin in this pseudomembrane, while Strong and Musgrave do not mention its presence. A moderate amount of fibrin was found in some but not in all of my cases. The submucosa is much affected according to these observers and this was my observation and the changes were the same, but Flexner speaks of much fibrin formation in this coat as well as hemorrhages, the former of which Strong and Musgrave do not mention, nor did I find fibrin or hemorrhages in this situation save in one case where hemorrhage continuous with that in the mucosa was found. Flexner also says that the submucosa may be affected with an intact or, almost intact, mucous membrane while in many cases when the submucosa participated in the process, it was only when the mucous membrane was greatly damaged. Flexner does not speak of but Strong and Musgrave mention subacute cases with hyperplasia of the solitary follicles and superficial erosions which suggests my group (B) with the follicular excavations. The other varieties which I have described find no prototypes in the published reports of Manila cases.

The foregoing report shows unmistakably that cases of Shiga bacillus infection exhibit most diverse pathological anatomy. The gross and microscopical changes of the extremes of these cases are so different that at first sight it would seem scarcely probable that they are caused by the same microorganism. There are indeed many considerations which must be taken into account before a final opinion is passed upon the question as to what extent the lesions found are to be ascribed to the action of this bacillus.

It seems to me that in discussing this point, which is among the most important of all, we can not afford to disregard the facts of clinical observation. A moment's reflection on the clinical course of the diarrheas of infants brings forcibly to our attention the common observation that some cases are extremely mild and respond almost immediately to ordinary therapeutic measures. In conformity with this fact it can be stated on the basis of my observations that a large percentage of fatal cases fails to show evidence of profound structural lesions. In view of the

slight nature of these lesions the question arises as to what extent the infection is to be conceived as a cause of death in infants. As regards this question, it may be said immediately that among these cases a percentage must be looked upon as intercurrent or so-called "terminal" infections in children already debilitated by previous disease, whereas in the remainder the very fact that the children are institutional children in a very depreciated state of health must be considered. It seems, therefore, to me that these slighter grades of infection in more vigorous infants are the ones possibly which respond so promptly to remedial measures.

In considering the severe lesions, particularly the ulcerative ones, the question immediately arises as to what extent the entire process is to be regarded as due to the Shiga bacillus. We are here confronted with the identical problem that has to be considered in dealing with similar infection in adults and thus far it has not been possible to separate sharply the damage done by the Shiga bacillus and that which is subsequently done by the whole host of microorganisms pyogenic and others normally contained in the intestinal tract. This much may be said, the evidence is in favor of the belief that the primary necrotic lesion is the result of the action of the bacillus of dysentery, the subsequent ulceration being brought about not improbably by the interaction of various microorganisms and the ordinary processes of demarcating inflammation. Beyond this point it does not seem possible to distinguish the action of the various microorganisms in the intestines.

The lesions in the intestines in children as in adults must for the present be conceived to be of two kinds, first those due to the action of the dysentery bacillus as already explained and second of toxic products of this and perhaps other organisms as is shown by the lesions of the submucosa and elsewhere among which the microorganisms have not been discovered. In this regard there is a conformity in the condition found in children and in adults.

It is important to take cognizance of the fact that after all, in my cases, the lesions found were not usually typical pseudomembranous inflammations, the pseudomembrane appeared either on the surface of ulcers or as isolated areas upon the mucous surface of the gut. In this regard the changes in children seem to be in contrast to those thus far described in adults. But a still further distinction is found in the much more common involvement of the solitary and agminated lymphatic structures in children, the same structures in adults usually escaping participation in the pathological process.

If we endeavor to sum up the case as is here made out for the Shiga bacillus we shall have to say, as it seems to me, that there are comprised under the lesions associated with it all grades and types of diarrheal disease as distinguished by clinical symptoms and pathological findings and that it can be affirmed that no particular type is



distinguished from the others by a special etiological origin.

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## THE UTILIZATION OF THE LOWER LIP IN RHINOPLASTY. A NEW PROCEDURE.\*

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IN this patient, a woman aged fifty-five years, I tried a method of repairing a nasal defect, which, as far as my knowledge goes, has not been attempted before, viz., to utilize part of the lower lip and chin for restoring the lost tissues of the left side of the nose.

The patient suffered from epithelioma, the microscopical corroboration of the diagnosis being furnished by Dr. Henry T. Brooks. As indicated by the scars on the forehead and cheek, she had been the object of previous rhinoplastic efforts,

Fig. 1.



Defect caused by recurrent epithelioma.

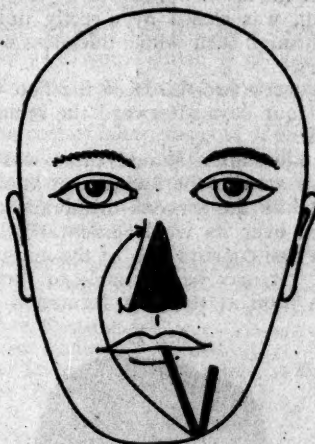
which appeared to have been entirely successful at the time they were made, about three years ago. When I first saw the patient, now two years ago, the disease had recurred and nothing was left of the transplanted flaps. As the previous operations had left no available tissue in the immediate vicinity of the diseased area, I resorted to the Italian method, taking a large flap from the left arm. Although considerable shrinking took place, agglutination became perfect, and no loss of substance was noted.

During last summer there was another recurrence, the destruction this time being more ex-

tensive, the mucous membrane of the left nostril being completely exposed, as shown in Fig. 1.

If I had not feared to impair the agglutinating tendency of the tissues by irradiation, which creates such unfavorable conditions for subsequent plastic operations, I would have resorted

Fig. 2.



Outlining of the flap.

to Roentgen treatment. But the experience of others, as well as my own, induced me to look for another plan, the *modus operandi* being as follows:

After outlining a triangular flap, the lower lip was divided in its whole thickness from a little over an inch from the left angle of the mouth downwards to the chin (Fig. 2). The flap-formation was finished by dissecting upward to the angle of the mouth, stopping about one-half of an

Fig. 3.



Appearance of flap two days after operation (the black surface above the upper lip indicates the non-united wound margin of the flap).

inch below in order to obtain a suitable bridge. The tip of the triangular flap was then turned around and sewed to the margins of the nasal defect, after extensive excision of the epitheliomatous area. The upper portion of the flap could be well approximated and fastened with silk

\* Case presented to the Surgical Section of the Academy of Medicine, January 8, 1904.

sutures. A part of the flap had to be left free, as is shown by the black sphere overlying the upper lip (Fig. 3).

No drainage tube was introduced into the left nostril at that time because I feared that this would produce undue pressure upon this part of the flap, which was simply dusted with iodoform. The gap of the lower lip, caused by the exsection of the flap, was closed by directly uniting the margins through their whole thickness with stout silk-sutures.

After a week two-thirds of the flap was severed, and four days afterward the remainder of the pedicle.

As the illustration shows, there was a small gangrenous area in the integument at the tip of the flap, while the mucous membrane remained unimpaired over its whole extent.

The ala nasi consists now of the margin of the lower lip. It may be amenable to further correction as soon as the skin formation over the

Fig. 4.



Appearance three weeks after operation.

granulating spot is perfect, when I will begin the prophylactic Roentgen treatment.

The advantages of this procedure seem to me to lie especially in the possibility of supplying throughout the whole area of the defect a mucous membrane which would restore normal conditions as far as possible. The broad wound-surfaces and the fact that the flap need not be larger than the defect because no shrinkage is to be expected, are another favorable element. How far it will influence the tendency to recurrence remains to be seen; still I presume that the conditions are more favorable now than previously. Fig. 4 shows the result three weeks after the operation.

**Composition of Muscles in Polyneuritis.**—In a case of polyneuritis after influenza, T. RUMPF (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 1 and 2) found the fat considerably increased in the degenerated muscles. The amount of water was reduced, but if estimated for muscle freed from fat, there was a slight increase. Other chemical changes were a reduction of nitrogen, an increase of chloride of sodium and a diminution of potassium and sodium. An analysis of the fat disclosed fatty acids which are not usually found in the human body but which occur normally in butter.

## A SIMPLE AND INEXPENSIVE RHEOSTAT TO USE WITH THE ELECTRIC LIGHT CURRENT.

BY DAVID T. MARSHALL, M.D.,  
OF NEW YORK.

A SIMPLE and inexpensive contrivance to enable one to use the ordinary 110-volt direct electric light current for therapeutic purposes may be made as follows:

A board about 2x1 foot is well painted and varnished on both sides. To this is fastened nine keyless and one key wall-receptacles. These are wired in series, *i.e.*, so that the current will pass through each one successively. The terminal wires are brought around to two binding posts. Wires running to binding posts are connected to *one side only* of each of the ten receptacles.

When the electric light current is connected by means of a flexible lamp-cord to the two terminals of the series of receptacles, a 16-candle power 110-volt lamp having been screwed into each receptacle, a current of a much reduced volume over what would flow through a single lamp will traverse the circuit, but it will still have a pressure of 110 volts. This of course is too high a pressure for one to endure long, if good sponge contacts are secured.

By connecting the sponges to the binding posts wired to the receptacles a current of voltages increasing by steps from 16 to 110 may be secured. If smaller steps are desired, more lamps must be put in series. This arrangement gives a continuous direct current.

To obtain a *direct vibratory* current, a buzzer or call-bell movement must be connected in *multiple* with the circuit. If the electromagnet of the buzzer is of too low resistance to be put on a 110-volt circuit then it will be necessary to introduce sufficient resistance in series with the magnets to give them the right amount of current so that they will work without heating. This can be done by the amateur with the least danger of making mistakes by disjoining the wires where they are twisted together at the ends of the coils and inserting one or more lamps in series with the coils (Fig. 1).

The buzzer with the resistance lamps in circuit

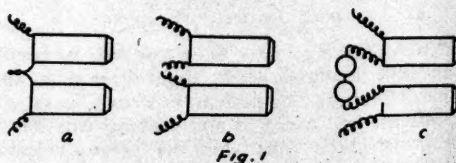


Fig. 1.

is then connected in *multiple* with the lamps on the board, as shown in Fig. 3.

This arrangement gives an intermittent or vibratory direct current, the rapidity of the vibrations depending on the character of the armature, strength of spring, strength of current, adjustment of contact screw, etc. The current for the sponges is taken from the binding posts connected to the lamps 1, 2, 3, etc. These contacts



may, for convenience, be brought down to a contact switch, as in Fig. 2.

When a direct non-vibrating current is desired, all that it is necessary to do is to turn up the adjusting screw at A, Fig. 3, until the armature is too firmly pressed upon to vibrate. A better way still is to insert a wooden wedge between the armature and the magnets. This saves the trouble of adjusting the screw when it is again desired to use the vibrator.

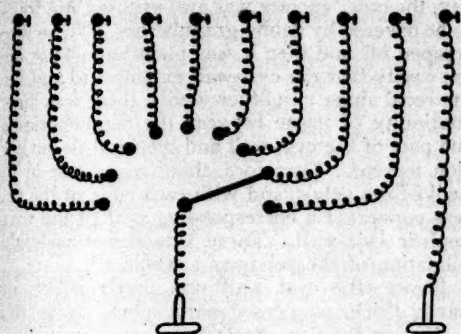


Fig. 2.

When the vibrator, with or without resistance lamps in circuit, is used, the voltage of the current traversing the lamps 1, 2, 3, etc., is reduced. Supposing the resistance of vibrator and resistance-lamp to be that of an ordinary 16-candle power 110-volt lamp, *i.e.*, about 250 ohms; then the current over lamps 1, 2, 3, etc., will have an electromotive force of about 50 volts, and the current from the binding posts 1, 2, 3, etc., will increase by steps of about 5.5 volts up to 50 volts. With twenty lamps the steps would be half as high. Variations of five volts

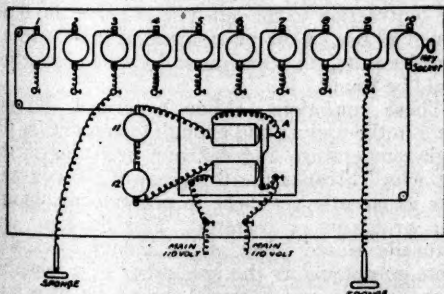


Fig. 3.

are small enough. Few people care to take continuous currents through from one hand to the other of more than 30 volts. When the current vibrates, much less than that is uncomfortable.

In this apparatus no mention is made of a milliamperemeter. A milliamperemeter may be put in circuit with the sponge wires, but for most purposes, so long as you know that you are well within the limits of safety, the sensations of the patient are a sufficient guide.

The amount of current which will traverse the sponge wires when shortcircuited between

any two binding posts may be easily calculated from the formula  $C = \frac{E}{R}$ , the value of R being for each 16-candlepower lamp about 250 ohms.

When contacts are made on various parts of the human body the value of R may be, even with good sponge contacts, as much as 8,000 or 10,000 ohms in addition to the 250 ohms of each 16-candlepower lamp in series.

Thus if E=50 volts and  $R=250+8,000$  (lamp + human body) C would equal  $\frac{50}{8,250} = .006$  ampère or 6 milliampères—an amount of current which is easily borne.

Excluding cost of labor, the cost of such an apparatus, including two yards of silk-covered lamp cord and an attachment plug, may be less than \$6. Materials with retail prices in New York are given herewith:

12 16-c.p. 110-Volt Edison Base Lamps, at 14c. ....	\$1.68
11 Porc. Ed. Base keyless receptacle, at 6c. ....	.66
1 ditto key, at 20c. ....	.20
4 No. 5 1/2 Porc. Knobs, at 1/4c. ....	.09
10 Single Screw Binding Posts, at 6c. ....	.60
1 I.B. Buzzer for use on 110-Volt circuit, at \$1.00. ....	1.00
6 feet No. 18 Office Wire, at 1c. per foot. ....	.06
5 feet No. 18 N.C. Silk Lamp Cord, at 8c. per yard ....	.40
1 Attachment Plug, at 11c. ....	.11
6 inches Lamp Fuse Wire ....	.15
1 board 1 x 2 feet ....	.25
2 dozen wood screws ....	.05

\$5.18

33 West Twelfth Street.

### TRAUMATIC PYELO-PARANEPHRIC CYST.\*

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THE facts of the case are as follows: The patient is a male, fifteen years of age, and was always perfectly well and sound up to his twelfth year, except for an attack of scarlet fever when very young. Parents perfectly healthy. Some time during his twelfth year, while shoveling snow he was struck in the abdomen by the handle of the shovel, which necessitated confinement to bed for several days. After that time and until two weeks before admission to hospital, March 28, 1902, his health was good, except for a more or less continuous pain in the right side of abdomen.

Two weeks previous to admission, while attempting to jump on to a shed, the patient fell, his abdomen striking with considerable force on the edge of the roof of the shed. His condition required that he be carried home and put to bed, where he remained four or five days with nausea and vomiting during the first forty-eight hours, and with blood in his urine. The hematuria disappeared on the third day. After five days the patient could get around the house, but abdominal pain persisted.

\* Read before the New York Surgical Society, December 23, 1902.

On date of admission, abdominal pain was intense, urine analysis was negative, general condition poor, and a small swelling was noticed in the right side of the abdomen on a level with the umbilicus. This swelling was dull on percussion; no record of further examination of this swelling, or of temperature, was obtainable.

With hot local applications, etc., the condition became better until about the middle of April, when pain became intense, accompanied by abdominal distention.

An incision was then made over and down to the swelling, followed by incision into the same, which evacuated over a quart of bloody fluid containing several large blood-clots, while partial examination of the wall of the swelling showed it to be very thick and extending inward toward the kidney. A general diagnosis of cyst was therefore clear. The edges of the sac were then sutured to the edges of the abdominal incision and a tube inserted. The bloody fluid according to pathologist's report contained "no urine."

From that time until just before I first saw the case in September, 1902, the patient's general condition improved; and the wound and cyst-cavity contracted until a regular sinus was formed. The sinus formation was complete in about six weeks after the incision, and remained stationary from then until September, in spite of local stimulating injections. During this period, urine flowed freely from the sinus; and repeated examinations were negative except for the presence of a fairly large number of leucocytes. Drainage tube had been removed permanently since the middle of July.

From about August 15 until October 1, however, there developed a series of "attacks," three or four in number, each attack consisting of high temperature ( $104^{\circ}$  to  $105^{\circ}$  F.); some delirium; pain and tenderness in and around the sinus, but no swelling; and cessation of flow of urine from the sinus. Each attack lasted about two days and yielded readily to cathartics and introduction of a drainage-tube and irrigation, when the flow of urine would be resumed. On recovery, patient's general condition was a little worse each time. It was therefore decided to explore the sinus with the idea of removing the cyst wall. The operation was performed October 3, 1902.

A word more as to the urine. During an "attack," as just stated, no urine came through the sinus (suppression?), but the urine from the bladder was uninfluenced thereby, both in quality and quantity, the latter having become almost as much as if both kidneys were normal. The amount of urine from the sinus was, between "attacks," a little less than normal each day. This precluded any necessity for finding out the condition of the other kidney should nephrectomy of the kidney on the side of the sinus be decided upon.

The operation proved to be difficult and tedious. A careful dissection (1) showed that the sinus ran into a large cavity; and (2) isolated enough of the cyst-wall of the latter for an ac-

curate diagnosis of the actual conditions, accompanied as it was by a wide opening up of the orifice of the sinus.

The conditions found are indicated in the title. Thus: the cyst-wall, thick and dense connective-tissue, was closely adherent to the surrounding paranephric tissue, beginning right at the orifice of the sinus, the partial isolating just referred to being followed constantly by profuse venous hemorrhage. Tracing this wall in toward the kidney, the inner surface was also exposed and found to be covered by flabby granulations. These were scraped off and then it was plain by looking into the cavity that the cyst-wall extended to and into the renal sinus. In other words, there was direct continuity of tissue between the paranephric-tissue part of the cyst-wall and the renal-pelvic portion thereof. Therefore, there was a tear in the wall of the pelvis, and with each edge of the tear was connected a corresponding part of the paranephric cyst-wall. There was also considerable dilatation of the pelvis as a whole.

Hence, the cyst wall was partly pelvic and partly thick, condensed paranephric tissue, thus justifying the title, *pyelo-paranephric cyst*.

Further confirmation was obtained by observing and probing two infundibula whose orifices opened proximally into the cyst cavity; and also by finding the opening of the ureter from within the cyst. A probe was passed into the ureter, but could go readily no further than two or three inches, owing to thick granulation-tissue within the lumen of the tube. Although tough, the cyst-wall was fairly elastic and, excluding suppression, was probably stretched by accumulation of urine during the "attacks" previously mentioned. There were also found a few ridges running in all directions around the inner surface of the cyst-wall, which might have caused the obstruction to the out-flow of urine also mentioned as one of the phenomena of the "attacks." At all events, no other cause for this obstruction could be found.

These conditions, although serious, did not seem in themselves bad enough to account for the high temperature and delirium occurring in the "attacks," because the thickness of the cyst-wall was apparently sufficient to prevent any absorption of toxins or bacteria. This being so, one naturally would think of the kidney as causing these symptoms as the site either of a nephritis with bacteria and bacterial toxins, or of a condition in which toxins (non-bacterial) were being elaborated by faulty metabolism of the kidney-cells, the general condition then being an auto-intoxication rather than a septicemia or toxemia as it would be if the local condition were nephritis.

The kidney was therefore partially exposed; and one or two small but deep incisions into it were followed only by blood. As no pus was found in the cavity of the cyst, this showed the probability of the nephritis being in the form of small foci of pus; since it seemed that the nephritis must be suppurative because of the severity of the general symptoms. The kidney



could be palpated and was soft and large. Realizing that if small foci of pus were present, the other kidney might also be similarly affected, it was nevertheless felt that nephrectomy should be done, because of the progressive impairment of the patient's general health, and because the other kidney had shown absolutely no signs of any trouble at all.

Nephrectomy was accordingly performed. Many adhesions were found and much hemorrhage occurred. An attempt was made to take out the entire cyst-wall with the kidney, but was abandoned owing to adhesions and loss of blood. Therefore, the kidney being now free, was removed, together with its adrenal body, the cyst-wall being cut right across at about its connection with the pelvic wall. Some two inches or so of the ureter below and outside of the cyst-wall were exposed and removed. There was now left in the wound only a good bit of the adherent original cyst-wall. The piece of ureter removed showed granulation tissue throughout; and the kidney, on being split, showed multiple pus foci but almost of microscopic size. The pathologist confirmed the diagnosis and also excluded tuberculosis both renal and ureteral. Any share in the cyst-formation on the part of the kidney or "adrenal," was also positively excluded. Most of the wound was sutured, a drain of gauze being inserted where cyst-wall was left.

Uneventful recovery except for wound. Thus: Some six or eight weeks after operation the patient was in perfect health and had gained ten or twelve pounds. Locally, however, the wound had become a sinus with the usual small amount of seropurulent discharge. It showed no signs of healing in spite of the usual stimulating injections. A week later a piece of silk ligature came away. Still no advance for another week. Ether was then given, the sinus laid open freely, and, as suspected, the remains of the cyst-wall was found just as large and tough as at the end of the first operation. Although hemorrhage was profuse, there was no reason (the patient being in good condition) for stopping the operation and leaving any of this cyst-wall behind; so it was all dissected off and the wound partially sutured and partially packed with gauze. The patient was out of bed in three days, and the wound solidly healed at the end of two or three weeks.

Of course the interesting, and probably unusual, aspect of this cyst is not that its wall was "paranepric"—paranepric cysts being fairly common—but that the paranepric part was so closely connected with the renal pelvis that there was not only a cavity in common, but also a continuous cyst-wall, first of paranepric tissue and then of the pelvic wall. Just how unusual this condition may be I have been unable to find out; but that it is certainly uncommon may be inferred from as much of the literature as I have been able to look up (see bibliography at end of article). The cause of the cyst, judging from the history and findings, was undoubtedly traumatism. The research into the literature—for most of which I

wish to express my thanks to Dr. J. F. McCarthy, of this city, while not exhaustive, was thorough, and resulted in finding mention of many pathologic cysts, renal or paranepric; of a few similar traumatic cysts; but no mention at all of pyelo-paranepric cysts, either of pathological or traumatic origin.

An attempt will now be made to assign the cyst to its proper place among cysts in general and cysts of the "kidney region." Hence, a short review is necessary of cysts in general and "renal cysts" (the last expression being used generically to express all cysts in the "kidney region," that is, cysts of the kidney, of the adrenal body, of the pelvis of the kidney and of the paranepric tissue).

Beginning with cysts in general, there are three main classes: [A] Truly neoplastic cysts, that is, cysts which are really neoplasms, often called *cystomata*; [B] parasitic cysts; and [C] cysts which are neither neoplastic nor parasitic. Cysts in the "kidney region" have, of course, the same classification.

[A] *Cystomata* or neoplastic cysts: These are being considered more and more in connection with true solid neoplasms with which they have far more in common both structurally and in etiology, than they have with "cysts." The structure of their walls, including that of the lining, is often quite complicated, so much so that the wall alone of a *cystoma* is almost, if not quite, identical with the structure of a solid neoplasm, thus differing entirely from the simple fibrous membrane of ordinary cysts or of the cyst which is the subject of this paper; while the contents is usually found to be made up of cell-elements mixed in with fluid or semi-solid tissue, very different from "serum" or "blood" of ordinary cysts. Many *cystomata* are also multilocular.

Coming to the "kidney region," the *cystomata* are exceedingly complicated and their origin is only in the kidney or adrenal body, or both. This origin from the cells of the Wolffian body and other embryonic structures and from inclusions of "adrenal rests," shows their complicated nature. We may therefore, safely exclude our cyst from the category of *cystomata*, especially of the kidney or "adrenal," if for no other reason than because no such findings resulted from the removal and examination of these structures.

[B] *Parasitic cysts*: This class needs only to be mentioned to be excluded from consideration. Even in the "kidney region," the kidney, "adrenal" and ureter are out of the question, as the result of the operation shows. There remains the paranepric-tissue in which there may develop parasitic cysts; but the cyst under description is certainly not of that kind.

[C] *Cysts which are neither neoplastic nor parasitic*: There are many varieties described, the chief difference between them seeming to be in many cases etiological rather than structural. The subdivisions generally accepted are: (1) Glandular retention cysts; (2) cysts in preexisting spaces other than the alveoli of glands; and

(3) cysts of new-formation or those occurring where there are no preexisting spaces.

1. Glandular retention cysts: From the nature and history of the case, these may be excluded; especially those of the kidney and "adrenal," nor could the cyst have started as a "retention cyst" of one of the minute glands in the wall of the pelvis. There are no glandular retention cysts of the paranephric tissue, that is, primary ones.

2. Cysts in "preexisting spaces other than alveoli of glands": Among these are: Distended bursæ; ganglia (of tendon sheaths); hydrocele; and hemocele; all comprising the "transudation cysts" of some authors. There should be added: dilated lymphatics (often called simple serous cysts or hygromata); and dilated blood-vessels or "blood-cysts"; the last named not to be confounded with angioma (a neoplasm), or hematoma (a cyst of new formation); nor the serous cysts, with lymphatoma (a cyst of new formation), or lymphangiectasis (a neoplasm).

Referring to the "kidney region," and excluding "kidney" and "adrenal," there are the renal pelvis and paranephric-tissue, either of which may be the site of these cysts. Taking first the renal pelvis: The "preexisting space other than alveoli of glands" would be the cavity itself of the pelvis. A cyst developing here might grow without involving kidney or ureter; or it might remain stationary; or it might involve the kidney or ureter; or its contents might break through the pelvic wall. Comparison with the cyst under discussion shows that a portion of it, *i.e.*, the part whose wall is renal pelvis, is identical with these cysts; or, in other words, is a cyst occurring in a "preexisting space other than alveoli of glands."

Regarding, in the next place, the paranephric-tissue: Part of the cyst occurred in this tissue. If it developed in a "preexisting space other than alveoli of glands" the "space" would have to be the lumen of lymphatics or blood-vessels which are in the paranephric tissue. Against this possibility, however, are several objections: First, these "lymphatic cysts" and "blood-cysts" are rarely if ever found in a region subjected to such a severe traumatism as we know was inflicted on the patient. Secondly, these "lymphatic cysts" and "blood-cysts" are so slow in growth and possessed comparatively speaking of such a delicate wall, that communication with the cavity of the renal pelvis through its tough, fibrous wall could not be established traumatically without a traumatism so severe as to destroy the delicate cyst-wall entirely. Furthermore, this statement implies the existence of the cyst prior to the injury; of which preexistence there is absolutely no evidence. Again, the cyst-wall actually found was as tough as the renal pelvis itself.

3. Cysts of new formation; or those occurring where there are no preexisting spaces. The capsule of these cysts is usually well defined and more or less distinct from the surrounding tissue. The contents is commonly "serum"; and if of long standing, it is often impossible to tell whether this "serum" was originally lymph or blood.

Among these cysts are: hematoma; lymphatoma; a "cyst-wall" of thickened tissue enclosing a foreign body; and "cysts of degeneration." The last named may be found in tendons as a variety of ganglia (distinct from that in tendon-sheaths just mentioned); or as a direct sequela to a "productive inflammation," in which case they are often multiple and small ("cystic degeneration" of some authors); they also occur in the tissue of some solid neoplasms.

In the "kidney region:" Cysts of new formation in the kidney and "adrenal" may be absolutely excluded. In the pelvic wall have been recorded small cysts occurring from traumatism and containing blood; also cysts of degeneration. These may also be excluded.

In the *paranephric tissue*, on the other hand, "cysts of new formation" are fairly common as the result of severe traumatism, and may be lymphatomata, but are usually hematomata. When we consider the structure of such cysts and compare it with that of the cyst under consideration, it would seem certain that the latter, that is the larger part of it, is a "cyst of new formation" in the paranephric tissue.

Having now placed this cyst in *two* subdivisions of cysts "which are neither neoplastic nor parasitic," a probably correct explanation of its method of formation may be had from a consideration of the etiology and method of formation of these cysts; especially since we know of the close relation of traumatism to our cyst. Thus:

In the etiology of "cysts occurring in preexisting spaces other than alveoli of glands" and of "cysts of new formation," traumatism is the most important factor, either as a predisposing cause or as a direct or exciting cause.

This statement, apparently simple, may, however, lead to misapprehension; hence the following brief elaboration: Cysts of these two subdivisions, when due to traumatism, are either recent or not. If *recent*, the contents (blood, serum or traumatic edema) is *directly caused* by the traumatism; but the capsule, as such, has not yet formed; and the "limiting wall" is simply the wall of the "space" (stretched or torn as the case may be), or the surrounding tissue (if no "space" existed). In this stage the cyst is not complete in that it has no capsule of its own.

If the cyst is *not recent*, its own capsule has had time to form, the formation consisting of a thickening of the tissue immediately around the contents, and a differentiation, more or less complete, of the same from the more remotely surrounding tissue; all this especially well marked in "cysts of new formation." This thickening, due to irritation from the presence of the contents, is regarded by some pathologists as a "productive inflammation"; but by others, as a form of degeneration, *e.g.*, a "fibrosis." Furthermore, the contents also is apt to undergo changes, especially if blood (absorption of coloring matter, deposit of fibrin, etc.). Hence the traumatism, in these complete cysts, is predisposing, the exciting cause being the fluid first produced.



Referring now to the case described and comparing with what we know of it that which has just been outlined, we may assume: (1) that the first traumatism ruptured the pelvis of the kidney and also caused a hematoma both within the pelvic cavity and in the paranephric tissue; (2) that, as time went on, the blood was gradually absorbed, and the thickened capsule (extra-pelvic portion) of connective tissue was formed (as just described) from the paranephric tissue; (3) that the opening into the pelvis, however, remained, but the capsule (extra-pelvic portion) was strong enough to hold any urine that might come through and prevent its extravasation; and (4) that the second traumatism caused a fresh hematoma, partly by tearing the inner surface of the capsule, as indicated by the ridges referred to in the history, and partly by causing small lacerations of the kidney.

Hence, as already stated, in making the individual comparisons, we may repeat (1) that the cyst, or rather cyst-wall, having two parts, the one (pelvic portion) corresponds to that of cysts occurring in "preexisting spaces other than alveoli of glands," and the other (extra-pelvic portion) corresponds to that of "cysts of new formation"; (2) that, as regards the cyst as a whole, both portions make a common capsule enclosing a common cavity; and (3) that traumatism was the predisposing cause.

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**Regeneration of Cartilage.**—The question if cartilage itself possesses the power to regenerate after trauma seems to be settled by M. MATSUOKA (Virchow's Archiv, Vol. 175, No. 1) who concludes that cartilage possesses no power of regeneration, for in all cases of loss of substance the cartilaginous callus took its origin from the perichondrium alone.

## ERGOT IN ALCOHOLISM, MORPHINISM, AND THE GENERAL CLASS OF DRUG HABIT CASES.

BY ALFRED T. LIVINGSTON, M.D.,  
 OF JAMESTOWN, N. Y.

SINCE the publication of my first paper on ergot therapy, so many inquiries have come to me for specific directions as to the treatment of the morphine habit (the case suggesting the inquiry, being, sometimes, the doctor himself) that I have concluded that a special paper on that subject will not now be out of place.

The habitual use of other opiates, alcoholic liquors, absinthe, chloral, cocaine, etc., produces similar trains of nervous symptoms and I therefore class all these poisons together in considering the therapeutic application of ergot to the conditions produced by any one of them.

Before considering the subject proper, I wish to place myself in antagonism to a theory widely promulgated by a few and thoughtlessly accepted by many. This theory regards the habitué as the subject of a specific disease which impels him to the habituation and specific names are given the so-called diseases, such as inebriety, morphinomania, etc., dependent upon the stimulus used by the habitué. The impulse to the use of, or the craving for, the particular stimulus, is classed as a symptom of that specific disease, as cough is a symptom of bronchitis, or pain a symptom of neuralgia. A logical sequence to this theory is the irresponsibility of the subject, as it would be manifestly irrational to chide the bronchitic for coughing, or the neuralgic for having a pain. I will not now go further into this matter than to say that while I deny *in toto* the existence of such specific diseases, I do not question that diseased states of the circulation, of the nervous system and of special organs result from the improper use or abuse of these stimuli. To present my ground in another way, I distinctly prefer the old-fashioned, conventional method of hitching the horse to the cart, rather than a method which places his head where his tail ought to be.

The most striking characteristic of an habitué who leaves off, or is forcibly deprived of his stimulant, is a disturbance or agitation of the nervous system proportionate to the per diem quantity of the stimulant that had been used. I have seen this agitation so extreme that, while continuously unconscious for twenty-four hours, the patient would at a bound throw herself from the dorsal recumbent position to the prone, and even from the middle of a wide bed to the floor, before the attendant with one hand upon her could interfere. Every muscle of the body seemed simultaneously active, and the sudden and combined action inexplicable. The sensory nerves were equally alert and especially along the spine was there extreme sensitiveness.

While the cerebrospinal system was so intensely agitated, the vasomotor system seemed paralyzed, with resultant intense hyperemia and sensation of heat to the hand. It was, of course,

not possible to take the temperature with a thermometer. The two things that were soothing in this case and that resulted in twenty-four hours in restoring consciousness and calm were ergot hypodermically and galvanization of the spine.

In less extreme cases (as in this one previous to the unconscious stage), there is mental irritability and frequent importunate demands for the stimulant that had been used, and nervous restlessness. It is this agitated state of the nervous system, the sense of restlessness within, a panicky search for relief, that suggests a renewed application of the drug that had, in fact, brought about this morbid impulse, though having, in its primary action, produced a perverted sense of comfort which is again sought for; a conclusion and determination as irrational and destructive as the persistent efforts of the winged insects that, seeking the light, finally fall into the flame and are consumed. And I wish here to put myself on record as protesting most earnestly against the too common practice of many medical men of using freely and inconsiderately as to results, and absolutely unnecessarily in most instances (or, if really indicated, unnecessary dosage and unnecessary repetition of dose), all this class of narcotic stimuli. It may seem a harsh and strong statement, but I believe it to be true, that the responsibility for the vast majority of these unfortunate cases rests upon those medical men who so inconsiderately and unnecessarily make free use of these baneful drugs. I say unnecessarily advisedly, for I have demonstrated to my entire satisfaction during the past twenty-six years that sleeplessness, pain and nervousness in the large majority of instances, may be more surely relieved by ergot than by the narcotic class of drugs.

My study of this class of cases and of nervous irritability and excitability in other classes, has led me to a positive conclusion that the nervous symptoms depend directly on a disturbance of the vascular system in the nerve centers and that the circulatory disturbance is due to paralysis of the sympathetic or vasomotor centers.

The logical conclusion is therefore that the prime indication is to tone the relaxed, dilated vessels and bring about as promptly as possible an equilibrium of the circulation. There are several methods by which this result may be wholly or partly secured:

1. Cold to the head and spine by means of ice-cap and spinal bag; or hot followed immediately by cold sponging of the spine, repeating these alternately half a dozen times or more, and such séance several times a day.

2. Galvanization of the chain of sympathetic ganglia by use of the hand electrodes, stroking from occiput to sacrum, the electrodes one on either side of the spine and separated about four inches from each other. The quantity of current should be 10 or 15 milliamperes and continued for twenty minutes. This should be followed by similar applications of five minutes

each over the upper, middle and lower cervical sympathetic ganglia; or the static current may be used and I particularly recommend a prolonged application of the static wave, half an hour or more, to the whole length of the spine with a spark gap of five to eight inches and this séance followed by sparking over the lines of the sympathetic ganglia.

3. Dry-cupping over the entire spine and including the sides of the neck, not with the old-fashioned alcohol cups, but with the modern valve-cups which are emptied by means of an air pump.

4. Massage, which, properly applied by a skilled masseur, is certainly of much service in stimulating the general circulation and, therefore, in relieving congested areas.

5. And last, but by no means the least, effective method, hypodermic injections of ergot. While the other methods may be effective, I present this one as the most certain and the most prompt in its action. I make this assurance not only upon many practical demonstrations but upon two grounds that I think will appeal to common sense and to reason.

First, because the rationale is correct. Disturbed function, whether of nerve centers, special organs or glands, is directly dependent on altered states of the circulation in them, especially as to the caliber of the blood vessels, a hyperemic state existing, due to the relaxed and stretched muscular coat. This condition can be thoroughly corrected only by so toning and strengthening that relaxed muscular tissue that it will contract and bring the vessels to their proper caliber, thus dispersing to other parts the excess of blood they had contained. Ergot contracts the sort of muscular tissue of which the muscular coat of the blood-vessels consists, but its most pronounced action is upon those areas of such tissues as are weak, relaxed and stretched, and, therefore, upon the dilated blood vessels. When the dilated vessels in any part have contracted, the disturbance of function which they had produced, in that part ceases.

I have been charged with using ergot empirically. If the statements of this, or any other paper I have written upon ergot, smack of empiricism, I would be glad to have the fact pointed out.

Second, because the method of applying the remedy places it the most surely, wholly and promptly where alone it can act. I am so often asked if ergot may not be given per orem or per rectum for the purposes for which I recommend it. Of course it may; but there is only one way by which you may be sure that it will all get where it may act for your purpose, and that is by putting it directly into the circulation. The objections which have previously existed to the general use of ergot hypodermically have been practically removed during the past six months by the special efforts of a few pharmaceutical houses who have succeeded in producing solutions of ergot for hypodermic use which do not seriously hurt nor



cause local inflammation when properly injected with an aseptic syringe. It is so difficult for the physician to make his own solutions with assurance of their being absolutely sterile, that it is generally preferable for him to employ the best solutions made by pharmaceutical houses, which are now marketed in small and convenient containers.

It only remains for me to suggest a method of practical application of the principles laid down in treating an individual case.

I will first mention the method which I have been accustomed to use. The first step is to wholly and immediately discontinue the use of the narcotic and place conditions about the patient which will absolutely prohibit access to that drug, or to any other that would be regarded as a substitute. By this method I demonstrate the most clearly to the subject what he is loath to believe, viz.: that neither the drug he has been using, nor any other of similar effect, is necessary to him. I at once begin the application of ergot, because I know that within from twenty-four to thirty-six hours, there will begin, in the extreme cases, a violent reactionary stage, the basis of which will be a dilated state of the blood vessels in the nerve centers, which may be modified by the action of ergot upon their muscular coat. At the same time I give a mercurial purgative followed in a few hours by a sufficient saline to assure prompt purgation. This is desirable in order to limit or avoid the irritative effect of a loaded bowel upon an irritable and excited brain and cord; and also to prepare the digestive tract for especially good service during the coming exhausting ordeal. In preparation also against exhaustion. I discontinue the ordinary meals and give abundant fluid and easily digested nourishment every three hours, such as a good form of beef, and the best of which I know is a paste, consisting of the ordinary fluid extract to which has been added the desiccated and pulverized fibrin. This form is therefore not wholly soluble, the fibrin settling to the bottom if not constantly stirred. The whites of a couple of eggs dissolved in half a glass of cold water, to which a pinch of salt has been added, make another good three-hour-interim meal as do also some of the cereal or lactocereal preparations on the market. With the exception of the egg food it is better to give all these liquid foods quite warm or hot. Do not use nutritives prepared with alcohol. The bowels must be kept open at least once a day, better two or three times, and I prefer the fluid extract of *Rhamnus frangula* for this purpose, in doses of one or two drams at bed-time and perhaps also forenoon and afternoon. The frequency of application of the ergot will depend upon the degree of addiction, and upon the general condition of the subject when the drug was discontinued. The larger the daily dosage had been and the greater the nervous prostration at the beginning of the treatment the greater is likely to be the reaction following the

discontinuance and, therefore, the greater should be the effort to prepare against this reaction. In general, the range would be from two to three doses per diem to one every two hours in the extreme cases, a dose being one-half dram of my solution\* or of Squibb's new extract of ergot for hypodermic use, the two solutions being approximately the same. In all that I have said I have kept in mind the most difficult of all the drug habit cases to successfully treat, the morphine habitués. As compared with these the worst of the alcoholic class is simplicity itself, if ergot is properly used. The so-called "gold cure," to use a slang phrase, "is not in it" as compared with the ergot cure and, no matter what the degree of addiction, I would not for a moment consider the plan of "tapering off." The extreme case of morphine habituation which I mentioned occurred twenty years ago and had I then known and applied what I now know of ergot therapy, I am quite sure that that "twenty-four hours" would have had a very different history, and I would not hesitate to-day to treat such a case in any well-regulated hospital. One fact in my experience with ergot in treating the habit cases is worth mentioning, viz., that in no case after the first forty-eight hours have I ever had a request from the subject for his drug or a substitute, nor have I seen in any case any evidence of such desire. I have repeatedly been asked by a doctor-subject what under the sun I had been giving him (supposing, evidently, that I had used a substitute) as he had not had an ill feeling.

I have said that there are other methods of securing the prime indication in these habit cases and I would advise combining one or more of them with the ergot treatment, especially in the extremest instances.

It is desirable to avoid using in treatment any of the narcotic or even hypnotic class of drugs. Sleep is one of the requisites, but it may be secured without those drugs and I would do so if I had to use all five of the therapeutic agents I have mentioned and that they will suffice I have no shadow of doubt. I am so radically opposed to the "tapering off" plan of treating the habit classes that I hesitate to make any suggestion that savors of it, yet I am persuaded that there are many excellent practitioners of medicine who would not persist through the first forty-eight or sixty hours in carrying out my plan of treatment, with a confirmed, large user of morphine, and that it would be better to apply a modified treatment from the beginning, than to begin with the radical treatment and resort to the drug during the crisis of nervous excitement and physical depression. As my method has reference chiefly to the moral effect upon the subject, I will suggest a plan by which this may still be secured though the subject has the benefit of a modi-

\* Take Squibb's solid extract of ergot 3j, dissolved in sterilized distilled water 5j. After filtering the solution add two volumes of chloroform and shake gently. This solution is the most satisfactory I have used. It should be made with every precaution to secure against sepsis.

fication which will avoid, wholly or chiefly, the extreme reaction. This is to apply only to the worse cases of morphine or opium addiction, as alcoholic and other classes do not require such modification. The modified plan is to give with two of the hypodermics of ergot, each day, a fractional part of the quantity that had been daily consumed, and one-tenth part will be found sufficient if the ergot is given often enough. For example, if ten grains per diem had been used, one of the morning hypodermics of ergot would contain one-half grain of morphine and the same quantity would be given with one of the evening doses of ergot. The second day the morphine would be reduced to one-quarter grain in each of the two morphine-ergot hypodermics and a similar reduction should be made of 50 per cent. each day of what had been the previous day's dosage until the eighth day, when the morphine should be discontinued. The use of the ergot should be continued two or three weeks after the discontinuance of the morphine, gradually lessening the frequency of administration, to secure permanency of the improved tone of the circulation. The fact of the administration of morphine with the ergot need not and should not be made known to the subject. In these extreme cases, it is especially important that some or all of the other measures suggested be used to aid in correcting the general circulation and restoring tone of the nerve centers. One other suggestion occurs to me, viz., that the phthalate of morphine be used in preference to any other salt of morphine, as I have found it peculiarly free from unpleasant reactionary effect.

The general course I have outlined for the treatment of drug habit cases is presented because I have demonstrated it to be successful and because I believe it to be a rational and common-sense method and the most likely to result in permanent benefit to the thousands whose slavish addiction to drugs is more dreadful than death.

#### SUTURE OF THE OMENTUM TO THE PARIETAL PERITONEUM (EPILOPEXY) FOR ASCITES.

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THE history of cirrhosis of the liver with ascites is usually progressive with fatal termination in nearly all cases. The abdominal effusion is one of the most distressing symptoms and has much to do with the fatal result. The effusion is caused by the pressure on the portal veins and capillaries in the liver and to secondary changes in the blood, due to want of function in this important organ. Possibly the engorged veins forcing the blood through the contracted liver hasten the degenerating processes in this organ. In old cases of this trouble adhesions are often seen between the omentum and parietal peritoneum.

These adhesions contain many large veins

showing that this is an effort of nature to establish a collateral circulation and relieve the obstructed portal system. The formation of these adhesions is no doubt often facilitated by tapping, but they are frequently found in cases that have not been tapped.

These observations led Talma, of Utrecht, to suggest the operation of Epilopexy for the relief of these cases. The first operation was done by Van der Meulen, of Holland, in 1889.

Several other of the earlier cases were reported from that country but none of them were successful. During the past eleven years many cases have been reported, with varying results. Gaston Torrence (*Annals of Surgery*, 1902, p. 303) collected 28 cases, of which 10 (35<sup>12</sup>/<sub>100</sub> per cent.) were cured, and 2 (7<sup>13</sup>/<sub>100</sub> per cent.) were improved. My case was Mrs. L., white, aged sixty years, wife of a saloon-keeper. She had used beer freely for a long time and for several years past has been in poor health, suffering from "liver trouble" and indigestion. I saw her early in February, 1903. Her abdomen was enormously distended; she was helpless and could move with great difficulty. Her limbs were edematous and her skin had a muddy yellowish appearance. She had not been tapped. An operation was suggested and readily accepted by the patient. She entered the Franklin Square Hospital and was operated on February 12, 1903. About 6½ gallons of slightly blood-stained fluid was removed. On opening the abdomen the peritoneum was seen to be greatly engorged; the liver was found to be slightly nodular and about half its normal size. The omentum was adherent to the parietal peritoneum on each side, the adhesion being very vascular. Its middle portion was sutured to the abdominal wall on each side of the incision and a gauze drain was inserted. Large quantities of fluid came away and the edema of the feet and limbs disappeared during the first two days.

At this time the drain was removed, and the wound soon closed. Although there was no indication of infection at any time, the patient ran an irregular temperature for more than three weeks. The morning temperature being usually subnormal, while the afternoon temperature was slightly elevated. The patient's general condition was always satisfactory, and her improvement was marked.

For six months after the operation her health was better than it had been for years and she was actively engaged in her household duties. Two weeks ago she began to complain of slight pain in her left thorax and from shortness of breath.

Dr. H. C. Bubert, her physician, diagnosed pleural effusion. I saw her with him, and on September 22 we aspirated her chest, drawing five quarts of bloody serum. Her abdomen presented a peculiar appearance before the operation. There was no distention of the lower part but on the left side of the median line below the costal arch was a hard mass, evidently the left lobe of the liver pushed down and forward.



September 23.—The patient much improved; still slight fulness over the lower left thorax; the left lobe of liver in its normal position, and careful examination failed to show any sign of ascites.

Some observers think that the ascites of liver cirrhosis is due largely to blood changes secondary to the liver degeneration. If this be true and the pleuritic effusion in this case was the result of such changes, the absence of recurrent peritoneal effusion speaks strongly for the operation.

The possibilities of this operation are limited by the liver condition. In cases where the cells of this organ are so far destroyed that its functions are lost; the result is fatal and the operation necessarily a failure. It is only in the less common cases, where the destructive processes can be arrested, that we can hope for a cure.

In others, where the degeneration is slow, the patients may be relieved. Several modifications to this operation have been suggested. Curetting and suturing the liver and other solid organs to the abdominal wall has been advised by some. These procedures seem to me to add danger to the cases without benefit. These patients have little resistance and readily become infected; the exudate from the irritated surfaces forms an excellent culture medium for germs, and the cases operated on by this method show a high mortality. It seems probable that irritation of the liver wall resulting in adhesion would be more harmful than beneficial.

The primary object of the operation is to relieve the congested liver, and irritation or suture of its coverings is not likely to bring about this result. Simple suture of the omentum with gauze drainage, it seems to me, gives the best results with the minimum amount of danger.

The case reported shows several points of especial interest: (1) The presence of the vascular adhesion showing the effort of nature to form collateral circulation; (2) the subsequent occurrence of pleural effusion with no ascites points strongly to good collateral circulation for the portal system, and (3) the marked improvement in the patient's general condition shows better functioning of the liver and intestinal organs after the operation.

**Bacteriology of Eczema.**—In a large number of cases of chronic eczema, F. VEIEL (Münch. med. Woch., Jan. 5, 1904) found staphylococci in all stages. The colonies were generally characteristic for the aureus, less often for the albus and citreus; occasionally several were present together, though the colonies were as a rule pure. The germs were in every way identical with the common pyogenic cocci and not with the staphylococci of the normal skin. The part which staphylococci play in the pathology of eczema cannot be decided with our present knowledge, but the fact that they occur in early stages and in pure culture, seems to indicate some important rôle in the pathogenesis of the process. Since other germs are absent as has been described by Unna can be positively excluded and eczema must hence be looked upon as a form of pyogenic skin disease.

## MEDICAL PROGRESS.

### MEDICINE.

**The Sun as a Cause of Disease.**—In these days, in which so much is being written of the stimulant and beneficial action of the actinic rays of the sun, it is but natural that the reverse of the picture should also find its painter. Finsen, indeed, who has been the pioneer in the therapeutic application of these rays, was also the one to initiate the reaction, by his studies on small-pox and light, and on sunburn. Prof. FERMI (Arch. f. Hygiene, 1904, Heft 4) has pursued this latter line of investigation experimentally, upon a large number of human subjects and with most interesting results. By exposing his "material" to the direct sunlight for varying periods of time he was able, in a large percentage of cases, to produce the following set of symptoms, which often persisted over many days: Cephalalgia, dryness of the nasal mucosa, snuffing, coryza, pharyngitis, weariness, slight conjunctivitis, dryness of the lips, fever, pseudo-influenza, constipation, insomnia, epistaxis, various pains. This congeries of symptoms seems not very formidable, yet it induces the author to conclude, from the observed coincidence of meteorological conditions and of certain diseases, that exposure to the sun's rays is a predisposing factor in coryza, influenza, hay fever and epidemic meningitis. A curious element is the fact that only 53 per cent. of the persons under experiment, found the exposure disagreeable, while the others, notwithstanding the subsequent ill effects, enjoyed it.

**Acute Polyomyelitis.**—Acute inflammation of one, or a group of muscles, is a rare condition, which may for a time simulate an infectious disease. In the case of J. BÄHR (Münch. med. Woch., Jan. 26, 1904), a lobar pneumonia was first suspected, but soon the pulmonary symptoms disappeared and the muscles of the shoulder region became acutely inflamed. The onset was with a distinct chill and throughout the course fever and tenderness along the nerve-trunks, without other signs of neuritis, were marked symptoms. Antipyrin and the salicylates were without effect. All attempts to isolate a specific germ were unsuccessful since culture taken from the fluid aspirated from the muscles, and the blood itself remained sterile.

**Acute and Chronic Inflammations of the Sigmoid Flexure.**—Acute sigmoiditis is a condition which has been observed repeatedly by A. BIRNBOIM (Münch. med. Woch., Jan. 26, 1904), and which manifests itself by fever, pains in the left hypochondrium and a distinct tumor in this region, of elongated shape, with constipation and more or less distension of the entire abdomen. The cause is probably an accumulation of feces in the folds of the gut. High leucocyte counts obtained in a few cases make it probable that a circumscribed peritonitis may follow. The treatment calls for rest, fluid diet, Priessnitz and cathartics; as soon as the bowels are emptied, relief generally sets in. In the chronic form the symptoms are the same but more prolonged and with less marked fever and the patients often complain of anorexia, lassitude and general nervous disturbances. The treatment is the same; occasionally massage gives much relief.

**Multiple Fat Necrosis.**—There is a close relation between fat necrosis and lesions of the pancreas, yet very marked cases have been described without the slightest suggestion of pancreatic disease. The most important of the latter is hemorrhagic pancreatitis, though its most acute form usually kills so rapidly that necrotic foci do not have time to form. Except in traumatic cases, the appearance of fat

necrosis seems to be limited to a certain age and to stand in close relation to the amount of panniculus adiposus so that stout individuals of advanced years are most often affected. The best way to demonstrate the foci is by means of the mordant for gliasfibers, which contains chrome-alum and acetate of copper; the latter will combine with the fat and give rise to a green color. This is not, however, specific for fat necrosis for fatty areas, such as atheromatous spots on the intima of the aorta, will also turn green, according to C. HART (Münch. med. Woch., Jan. 12, 1904). The etiology of fat necrosis is still obscure, but it is generally conceded that pancreatic juice escapes from the inflamed pancreas and that its fat-splitting ferment liberates fatty acids which combine with lime salts. The clinical symptoms are uniform: there are signs of intestinal occlusion or perforative peritonitis or else severe colic and collapse develops so that an intoxication or severe infection is suspected. The pathological lesions do not explain the symptoms, which may possibly depend on irritation of the sympathetic nerves. All therapy is without avail, yet cases of spontaneous cure are on record.

**Occurrence of Koplik Spots in Measles.**—In a severe epidemic of measles, O. MÜLLER (Münch. med. Woch., Jan. 19, 1904) found the Koplik spots present in 81 per cent. and an initial eruption on the hard palate in 86 per cent. It was only possible to observe 12 cases during the period of incubation; in these the spots were found seven times on the first day of the disease, when the temperature began to rise, when the eruption on the hard palate usually did not show itself before the third day. The author also had occasion to observe an epidemic of rubeola in which almost half of the cases presented typical Koplik spots, so that these can no longer be considered pathognomonic for measles. The diazo reaction in the latter disease was also studied; it is very constant in appearance but is of less practical value since it is rarely positive before the end of the first stage or the beginning of the second. There seems to be considerable difference of opinion as to the temperature curve in measles; in most cases seen by the author from the very start, there was an initial rise, then an intermission of one to two days, and finally a continuous fever of several days' duration. In two instances the temperature rose with a remittent curve and in one the onset was sudden, with high fever.

**Eosinophile Cells in Sputum.**—A good method for demonstrating the eosinophile cells in sputum is given by W. HILDEBRANDT (Münch. med. Woch., Jan. 19, 1904). He spreads the particles of sputum on a slide, heats this and treats it for thirty to sixty seconds with ten drops of Leischmann's eosinmethylene-blue solution. Fifteen to seventeen drops of water are then added to the dye and the whole allowed to remain on the slide for seven to nine minutes more. The slide is finally washed, dried and examined with the oil-immersion. It is a mistake to believe that the presence of many eosinophile cells has a special diagnostic value since they are found in abundance in many diseases of the respiratory tract. In tuberculosis of all varieties they may constitute up to 80 per cent. of all cells and they often abound in the sputum of acute and chronic bronchitis, bronchopneumonia, lobar pneumonia and hemorrhagic infarct of the lung. They also occur in nasal and pharyngeal secretion without the presence of asthma and in the vaginal secretion of gonorrhea. In asthma, however, the granules are larger and more distinct and take a deeper stain, yet

these peculiarities are not sufficiently marked to enable a diagnosis.

**Tachycardia in Pulmonary Tuberculosis.**—Tachycardia during the course of infectious diseases is generally due to weakness of the heart muscle, and this applies to tuberculosis as well. There is, however, an increased pulse-rate during the early stages where fever is still absent, which evidently has a different causation and which is frequently of importance as an early symptom. S. STERLING (Münch. med. Woch., Jan. 19, 1904) states that it also has a high prognostic value, so that the following rules may be laid down: (1) A normal pulse-rate in the course of pulmonary tuberculosis is a very favorable sign. (2) Constant tachycardia renders the outlook more serious, in direct proportion to the degree of increase, especially if fever is absent. This applies particularly to the first stage of the disease. (3) Nervousness on part of the patient will only bring about a temporary increase; even strong psychical influences will only add 5 to 10 beats to the pulse where in the non-tuberculous the increase would amount to 20 to 30 beats. (4). The rules apply to both sexes but do not hold so strictly in children and old people. (5) There seems to be no constant relation to hemoptysis; convalescence from influenza retards the pulse, and rest, cold applications to the precordium and the bromides have the same action in the more favorable cases. (6) With a slow pulse, the outlook is excellent unless some renal or arterial disease, etc., is responsible for the condition.

## OBSTETRICS AND GYNECOLOGY.

**Extra-uterine Pregnancy.**—It may be admitted that the profession is now in fair possession of the facts related to the pathology of extra-uterine gestation. The symptomatology, however, and, above all, certain details of the treatment, are still largely in need of elucidation, and an experience of more than 18 cases, as reported by M. STORER (Bost. Med. and Surg. Jour., Jan. 7) is well worthy of attention. This author has had an especially valuable experience with tubal abortions, inasmuch as this condition, ordinarily considered so rare, occurred in 56 per cent. of his cases. The symptoms, which he found of chief importance in this condition were pain and anomalous escape of blood from the uterus. This pain is characteristic, yet ordinarily not severe enough to bring the patient to a doctor. It is quite different from that of ordinary menstruation, short-lived, stabbing, not colicky, and not comparable in severity with the pain of a tubal rupture. The subsequent metrorrhagia ordinarily excites the suspicion of the patient, which is confirmed by a vaginal examination. As regards tubal abortion or rupture, the author states that the characteristic symptoms, contrary to general belief, occur before the eighth week. The question of treatment resolves itself into one of operation; the author advises that this should always be as early as possible after diagnosis.

**Intra-uterine Flushing and Drainage.**—As a substitute for the curette and douche in the treatment of puerperal sepsis, H. G. WETHERILL (Am. Med., Jan. 30, 1904) proposes the employment of a double drainage tube and frequent irrigations with weak alcohol. A soft rubber tube of the proper diameter is doubled on itself so as to form a triangular end. The removal of putrescible debris from the uterus is accomplished by the finger or a blunt placenta forceps, followed if necessary by flushing with salt solution, potassium permanganate or diluted alcohol, all of which are non-toxic and used only for



their mechanical effect in washing out loose fragments. The double drainage tube is then inserted to the uterine fundus, the vagina lightly packed with gauze, no anesthetic being necessary. The tubes are then flushed out every two to four hours with alcohol, varying from 25 to 95 per cent. in strength. The author considers that the omission of any gauze packing in the uterus is very important and the diluted alcohol used for flushing the tubes, in addition to its mechanical effect in removing debris, has a chemical action in arresting putrefaction and bacterial growth. It is non-toxic and also supporting and stimulating.

**Rupture of the Uterus During Labor.**—Happily this is a very uncommon accident. T. B. GRIMSDALE (Brit. Jour. Obstet., Dec., 1903) finds that its frequency varies according to various authors from 1 to 482 cases (Collins) to 1 to 6,000 (Lusk). The mortality is also very high, varying between 55 and 95 per cent., according to the estimates of authorities. The lowest mortality is obtained where prompt abdominal operation can be performed. A patient who came under the writer's observation had had four children, and her fifth confinement started on June 14, 1903, at 2 P.M., when the "waters" burst. At 9.30 the following evening labor pains began, and continued until a hand (the left) presented. Version was done, but as the os was rigid there was some delay. The child was dead and putrid. When the operator tried to get the foot down through the os, it was recognized that something was wrong, for at the posterior portion of the os another opening could be felt, and through this there came what the accoucheur considered a loop of the intestines. The delivery was completed and after the vagina had been packed with gauze, the patient was removed to the Royal Infirmary where she arrived at 3 o'clock the next morning. The abdomen was opened as soon as possible and there escaped from its cavity clear fluid and blood clots. The uterus was found to be ruptured in the posterior portion of the lower uterine segment. Panhysterectomy was performed. The patient was much collapsed after the operation. On June 28, one week after the operation, the patient acquired pleurisy, which cleared up in four days, and on July 21 she was discharged as cured. The author believes that the safest treatment in the long run will be found in the boldest measures; also, that it is safer in these cases to remove the entire uterus.

**Hydatiform Mole.**—The patient in whom this condition developed had had one miscarriage and three children, and when she reached her fortieth year in March, 1901, she had missed her last period. On April 9 she had a severe hemorrhage. Five days later there was a second one, and still five days later, the third; large clots being passed on each occasion. The patient had nausea, and vomiting and on examination, there could be made out a large abdominal tumor resembling in size and shape a pregnant uterus, but which had enlarged much more rapidly than a pregnant uterus should. JNO. D. MALCOLM (Brit. Jour. of Obst., Dec., 1903) examined the patient and found the uterus enlarged, but the cervix was hard and firm. As neither fetal heart nor uterine souffle could be heard on auscultation, pregnancy was ruled out in making a diagnosis of the condition. May 8 Dr. R. H. Bell had the patient anesthetized. On introducing the finger through the cervix, a soft mass, which did not bleed freely, was felt, but there was no trace of membranes or fetal parts. A small piece of the mass was dragged out and proved to be the characteristic small cysts of a hydatiform mole. The uterus was emptied and curetted. At this time there was no suspicion of the presence of any

abnormal condition outside the uterus. May 25, after the patient had had a tedious convalescence, a second operation was decided upon because the patient had had a great deal of abdominal pain, especially upon the right side of the pelvis. Dr. Malcolm opened the abdomen and a cystic tumor of the right ovary was found, which was as large as a coconut. On the left side there was a similar but very much smaller growth. The pedicle upon the right side was twisted, causing, no doubt, the previous abdominal pain. The uterus was large and flabby and not of the same consistence throughout. It was found to be invaded by a chorio-epithelioma. A complete hysterectomy was performed. The patient left the hospital on July 8, forty days after the last operation. A letter received from the patient on April 4, 1903, reported that she was in excellent health. On June 20 of that year, a physical examination by the author showed all parts of the pelvis perfectly healthy.

**Acute Contagious Pemphigus Neonatorum.**—It is rare to find this disease occurring as a limited epidemic unless it be of syphilitic origin. When it does occur, it is local in its distribution, among the poor, and is associated with unclean linen and want of antiseptic precautions. In September and October, 1902, an outbreak of this peculiar infection sprang up in the Richmond (Surrey) Lying-in Charity Hospital. According to GEORGE J. MACGILL (Brit. Jour. Obst., Dec., 1903) there were 18 infectious out of 20 cases delivered by one midwife; and when she left the neighborhood the epidemic ceased. Of these 18 cases, eight died. The symptom common to all the cases was the skin lesion; nor was there any other manifested in those infants that recovered. In all the fatal cases, there had been other signs, forming a group of easily recognizable and similar symptoms; the whole composing a clinical picture of definite outline. The bullae, after breaking down did not dry up or pale, but remained constantly moist until the death of the infant. There were also symptoms of an acute toxemia in the fatal cases. The epidemic was found to be due to infection by a pathogenic organism, the *Staphylococcus pyogenes aureus*, convey from case to case by the infected midwife. Although only fatal among the new-born older children and adults were attacked during the epidemic. It was characterized by a bullous eruption of the skin, variable in distribution and extent, the specific micro-organism being found in the contents of the vesicles. The point at which the systemic invasion took place was the unhealed umbilical scar. Treatment to all appearances had little or no effect upon the course and duration of the disease, whatever the final outcome of the case.

**Acute Yellow Atrophy of the Liver with Pregnancy.**—The following case, which is most interesting, is reported by A. J. STURMER (Brit. Jour. of Obst., Dec., 1903). Woman, aged thirty-five years, II-para, was admitted into the Government Maternity Hospital at Madras, in a semiconscious condition. She was said to be six months pregnant. Her urine was of high color, sp. gr. 1.015, and acid, but contained no albumin. With a drop of nitric acid no decided bile reaction was present, but on the evaporation of the acidified urine leucine crystals were present. Abdominal examination showed no uterine action and the liver dulness seemed to have disappeared; the hepatic area was resonant all over. Her bowels did not act, and after a restless day she became noisy, and died twelve hours after admission. A post mortem was made nine hours after death. All the tissues were bile stained. Liver shrunk under the ribs and folded on itself and wrinkled; tissue very soft, not yellow, and more like that of the spleen; no

lobules apparent; weight 23 ounces. Gall-bladder empty, except for a little thick gray mucus; ducts all pervious; uterine wall thin, and the placenta attached to right and front, amniotic fluid greenish yellow in color. Intestines not injected. Bladder contained a good deal of very yellow urine. Section taken from the surface of the liver showed that the liver structure was gone; it was only an ill-staining mass of debris, pigment and fatty granules. Those cells, which were not completely disorganized, showed an indistinct outline, being granular and contained a large amount of pigment, which completely obscured the cell nuclei. This pigment was a very marked feature of the specimen. Acute yellow atrophy of the liver during pregnancy is quite rare. From 1883 up to present time, 37,475 labors and abortions were treated at the Government Maternity Hospital in Madras, and during that period, but five cases of this disease have been noted. In 1886, two cases were recorded. The writer gave the patient under consideration, thyroid extract on the supposition that the disease was one due to perverted metabolism, but, of course, no results could be obtained, as the patient so rapidly succumbed.

**Antenatal Rigor Mortis.**—Medical jurists can no longer doubt that this condition may and does take place before the expulsion of the fetus from the uterus; and, says KEDARNATH DAS (Brit. Jour. of Obst., Dec., 1903), that its presence in the new-born infant is not necessarily proof of life apart from the mother—of, in fact, an independent existence. In all there have been 39 such cases reported. The rarity with which it has been observed may be explained by the following circumstances: (1) The fetus has probably gone through the rigid stage before birth; (2) the obstetrician generally remains busy with the mother; (3) out of respect to the relatives and friends of the patient, the doctor does not like to critically examine the fetus after it has been found dead; (4) probably the attention of very few obstetricians is directed to this point. In a case of the author's the fetal movements had been most violent, but half an hour later no fetal heart sounds were audible. The writer is inclined to believe that prolonged gestation after the period when labor comes on spontaneously, may be an important factor in the production of antenatal rigor mortis.

**Permanent Results from Prolapse Operations.**—An interesting series of statistics is presented by M. JACOBY (Arch. f. Gyn., Vol. 70, No. 3) relating to 257 cases of uterine prolapse treated by various operative procedures. About 77 per cent. of these could be traced for the purposes of the investigation. As far as possible the choice of operation in each case was governed by the actual conditions seemed to demand rather than by favoring any particular procedure which might happen to be in vogue at the time. The author, as the result of his observation, became convinced of the truth of the proposition already advanced by Küstner, that in every operation for uterine prolapse it is most essential to correct whatever displacement may exist of the uterus itself. He comes to the conclusion that no one method can be recommended for all cases, each case must be treated individually. Prolapse of the posterior vaginal wall due to old lacerations can in most instances be corrected by a perineorrhaphy after the method of Asch without doing a separate colporrhaphy. If the anterior wall is prolapsed, an anterior colporrhaphy must be added. Recto- and cystocele demand particular attention. If the prolapse of the vaginal walls is accompanied by a retroflexion or a retroversion, this should invariably be attended to. He prefers the Alexander-Adams operation for bringing the uterus forward and where there is a high de-

gree of prolapse in women after the climacteric, recommends a vaginal hysterectomy, together with the necessary plastic operations on the vagina. Permanent results in his series of cases comprised 94.53 per cent. of all women examined, after a sufficiently long time to test the success of the operation. These figures are much more favorable than those presented by other authors, which range from 69 to 79 per cent.

**Puerperal Metrophlebitis.**—A number of surgeons have recommended and carried out with more or less success, a method which consists of ligating or excising thrombosed veins due to puerperal pyemia. Trendelenburg adopted an extraperitoneal approach to the hypogastric vein and reports a successful case. Sippel recommended, in cases where the uterus was removed for pyemia, that the neighboring veins be followed up and excised, this of course by the abdominal route. The former advises doing the operation after the second chill, the latter not until the chills have recurred several times. Trendelenburg thinks it is essential that the hypogastric vein should be ligated, because in a series of 21 autopsies on cases of thrombophlebitis, he found the hypogastric involved about twice as often as the spermatic. GROSSMAN (Archiv f. Gyn., Vol. 70, No. 3) has lately made a more extensive series of autopsies in order to determine the relative involvement of these veins. Among 51 cases there were 14 with thrombophlebitis, 24 with lymphangitis and 13 in which both forms were combined. He also found that in the majority of cases other veins besides the hypogastric were thrombosed. In only one case could the operation advised by Trendelenburg have been done. A previous diagnosis had only been made in nine instances. The course of the disease in all cases where there is a simple thrombophlebitis is a protracted one, lasting several weeks or months, while in the majority of cases where a lymphangitis is present the fatal result comes on in a few days. Another noticeable feature in this series of 51 cases was the fact that in all some divergence from the normal course of labor was present. The author does not believe that the mortality in puerperal pyemia will be much affected by the introduction of this operation, but thinks that the effort is a step in the right direction and further research should be encouraged.

## NEUROLOGY AND PSYCHIATRY.

**Musical Equivalent of Epilepsy.**—TRIFILIO MONTAGNINI (Gaz. degli ospedali, Dec. 27, 1903) reports two cases in which a musical equivalent of epilepsy was observed. The history of his own case was that of a man aged forty-eight years, subject to epileptic attacks. Physically he was normal; mentally somewhat weak, querulous and excitable, and sometimes subject to mild delusions of persecution. From 1892 to 1896 he suffered from typical epileptic attacks, with mental deterioration, and occasional spells of echolalia. In 1896 he presented the phenomena of ambulatory automatism. In 1897 his mental condition was at times somewhat demented. He began to suffer from attacks of singing, which began and ended suddenly, lasting five to ten minutes, at which time he was insensitive to pain or touch. He never had convulsions during the song, though marked pallor and a slight trembling were noted. These attacks of singing were improvised and spontaneous; not caused by external stimulus. In 1898 he alternated attacks of singing with general convulsions, both of which occurred more frequently than formerly. Treatment by bromipin, continued to 1902, completely stopped the motor convulsions, and made the attacks of singing much less frequent. The writer does not believe these musical crises were related to the de-



mentia, because they occurred at the same time; they always were the same in character, and lasted about as long as grand mal—five to ten minutes. They persisted and the patient was not unconscious during the attack. The general tremor, pallor and anesthesia to pain during the attack was remarkable, and their subsidence under bromides was marked.

**Diagnostic Significance of Certain Reflexes and Tendon Phenomena.**—The importance of certain tendon and skin reflexes in determining the presence of organic disease is being more fully realized not only by neurologists but also by those who come in contact with general medical cases. H. OPPENHEIM (Med. Rec., Jan. 2, 1904), whose experience in a clinic for nervous diseases in Berlin has brought him in contact with so many thousands of cases in which the knee-jerks were carefully examined for, makes the statement that he has never seen more than three or four instances of complete loss of knee-jerk when some organic disease of the nervous system was not present. These very few exceptions would seem to prove the rule. Mechanical conditions may sometimes render the demonstration of this reflex difficult or impossible. Obesity and joint deformities must, of course, be taken into consideration. He urges also the importance of the heel phenomenon, or plantar flexion of the foot upon sticking the tendo Achilles. This has not been held to be of much value on account of its supposed inconstancy in healthy individuals, but he believes that if the examination is made with the patient in a kneeling position the reflex can be regularly elicited. The absence of this phenomenon may depend upon neuralgias, sciatica, deformities, alcoholism, and diabetes and even in apparently healthy people it is sometimes absent, but on the other hand, it is of great importance, and in tabes may disappear before the knee phenomenon. The significance of Babinski's reflex has also been thoroughly investigated and for a time was thought to mean an increased tonicity such as exists in a spastic paraplegia, the pyramidal tracts being involved. It has been found, however, that it does exist in many cases in which there is also an involvement of the posterior columns of the cords and areas of the nervous system which exerts an influence antagonistic to the symptoms from pyramidal tract diseases alone. This phenomenon may then be the only remaining sign of pyramidal lesion. When this tract is involved in the brain, as in hemiplegia, Babinski's sign is, as a rule, present, but lesions of certain other tracts and centers at the same time may prevent its appearance. In the first year of life the sign is also present because the pyramidal tracts are yet undeveloped. In certain cases of epilepsy the sign has also been demonstrated so that we must not conclude that its pressure always means an organic lesion of the pyramidal tracts. The author also alludes to a reflex which he first observed and which is similar to Babinski's in importance, but which may sometimes be demonstrated when the latter is absent. If, in a normal person, on stroking the inner side of the leg from above downward, with the thumb or by pinching a fold of skin on the inner side of the leg, either no reflex movement will follow or a plantar flexion of the toes will follow. In affections of the pyramidal tracts a dorsal flexion of the toes and foot is observed. In this reflex not only the extensor longus hallucis but also the tibialis anticus and sometimes the extensor communis digitorum contract.

**The Presence and Significance of Cholin in the Cerebrospinal Fluid in Epilepsy.**—Ever since Mott and Halliburton discovered this alkaloid in the blood and cerebrospinal fluid of cases of nervous disease, the relationship of this substance to the pathogenesis of le-

sions of the nervous system has been carefully studied. Found by the original investigators in progressive paralysis and tabes, combined and disseminated sclerosis, alcoholic polyneuritis, beriberi and after experimental section of the sciatic nerve, this alkaloid has also been discovered in the cerebrospinal fluid of epileptics by J. DONATH (Hoppe-Seyler's Zeitsch., Oct. 31, 1903), who finds that not only is it present in such cases as a rule, but that it also is capable of producing convulsions if injected into animals. It is remarkable that in genuine Jacksonian and syphilitic epilepsy, the evidence of the presence of cholin is as positive as in organic diseases of the central nervous system, in which the presence of cholin is to be attributed to the disintegration of nerve-tissue with the setting free of lecithin and the splitting off of cholin. On the other hand the author found no cholin in cases of simple hysteria, hystero-epilepsy and neurasthenia. It appears that cholin is burnt up in the blood, for if injected into the brain or into the veins, its presence cannot be detected afterward in the urine. The author injected cholin into the cerebral cortex with the result of producing severe tonic and clonic convulsions that frequently terminated in paresis. The convulsions were mostly general, yet frequently they predominated on one side. In experimenting in the same way with neurin, the author found no appreciable qualitative or quantitative differences between the two substances. Both are powerful nerve-poisons, having a more effective action upon intracerebral than upon intravenous injection. The author is of the opinion that in epilepsy two causative factors are at play, namely, an increased excitability of the cerebral cortex and the operation of some toxic substance. The fact that cholin is found in the cerebrospinal fluid in this disease as in organic diseases of the nervous system, and also the experimental proof of its action when injected into the body, led him to conclude that cholin plays an eminent rôle in the production of the epileptic seizure. At the same time the brain of epileptics is, as the result of hyperemic, chronic inflammatory or hypoplastic processes, more susceptible to the action of such toxins. In this way may probably be explained the epileptiform attacks in progressive paralysis, in which cholin is produced, and in which hyperemia causes an increased excitability of the cortex of the brain.

**The Uses of Lumbar Puncture.**—A summary of the technic and the clinical and therapeutic advantages of the lumbar puncture is made by C. M. CAMPBELL (Rev. of Neurol. and Psych., Jan., 1904). The puncture is best made in the fourth lumbar interspace, where the dura mater is most firmly attached and where there is thus less chance of the membrane being pushed onward by the needle and failing to draw off fluid. The fourth interspace is determined by feeling for the highest point of the crest of the ilium on both sides; the line joining these points passes over the fourth interspace. Normal cerebrospinal fluid is clear as crystal. If the fluid withdrawn by the operation is bloody, one has to determine whether the blood is caused by the operation or not. There are a number of methods of finding this out, one being that devised by Sicard, namely, that of noting the intensity of the color of the fluid removed; if the blood is due to a hemorrhage, the fluid has a darker tint than if the blood is due to the operation. A greenish or yellowish coloration is seen in chronic jaundice. Of clinical value is the estimation of the osmotic tension of the fluid. Two methods for this purpose are available, the cryoscopic and the hemolytic. The freezing point of blood serum is  $0.56^{\circ}$ , while that of normal cerebrospinal fluid is about  $0.75^{\circ}$ . The fluid therefore has a greater molecular concentration than blood serum—is hypertonic with regard to it. This hyper-

tonicity is inverted in cases of acute meningitis. The inversion, if present, confirms the diagnosis of meningitis; if absent, does not exclude it, and in any case does not help to distinguish between the tuberculous and the non-tuberculous form. Bacteriological examination of the fluid often reveals the presence of a meningitis where no clinical symptoms may be present. One has no right to deny, according to Widal, that a case has not been tuberculous meningitis merely because it has recovered, unless inoculation of a guinea-pig with the fluid has proved negative. Bacteriological examination also enables one to subdivide the various forms of non-tuberculous meningitis into (1) epidemic cerebrospinal meningitis due to the pneumococcus of Talamon, the meningococcus of Weichselbaum or the streptococcus of Bonome; (2) the serous meningitis of Ziegler, caused by a variety, among others, by pneumococcus; (3) cases in which Widal has discovered a variety of organisms. In boiling a normal cerebrospinal fluid a slight opalescence and fine threads appear; in certain pathological conditions, as in cases of tabes, general paralysis and syphilitic meningomyelitis and hemiplegia, this opalescence is exaggerated into a turbidity. A similar condition is found in erysipelas of the face, polymorphous erythema, cerebral hemorrhage and secondary syphilis. In acute meningitis fibrin is present. As regards permeability, the normal meningeal covering does not allow potassium iodide to pass through it; this does occur in tuberculous meningitis. The most valuable method of examining the cerebrospinal fluid is the cytological. Normally the cerebrospinal fluid is almost free from elements, containing no polymorphonuclear leucocytes, and few or no lymphocytes. Where there is meningeal irritation this is not the case. Thus in tuberculous meningitis the cells are almost entirely lymphocytes. In acute non-tuberculous meningitis there is usually a marked leucocytosis, sometimes rendering the cerebrospinal fluid purulent. If during chronic nervous diseases the meninges are irritated, cellular elements are found. In general paralysis a lymphocytosis of the cerebrospinal fluid is one of the earliest signs and is practically constant. In true psychoses and dementias of different origin, lymphocytosis is absent. This is also the case in hysteria, neurasthenia and epilepsy. In tabes dorsalis, lymphocytosis is the almost universal rule. The headache, which is such a constant symptom in secondary syphilis, is in certain cases associated with a lymphocytosis of the cerebrospinal fluid. As regards the therapeutic applications of lumbar puncture, it is of value in certain forms of meningitis, in uremic conditions, even with the fluid not under high pressure, and in the headache of secondary syphilis.

**The Blood in Epilepsy.**—An experimental study having for its object the determination of changes in the blood as a possible cause in the production of epilepsy has been made by F. S. PEARCE and I. N. BOSTON (Medicine, Feb., 1904). The cases studied included only those of essential epilepsy, where there was no organic disease in the brain or any other organs. As no definite histological changes have been noted in idiopathic epilepsy, inherent irritability of the cortical cells remains as an only explanation for the existence of the disease, if we do not think of disturbed metabolism being perhaps the exciting cause, or of some other poison circulating in the blood. Blood studies seem to be of importance therefore, in addition to careful examinations of the urine and other excretions. Observations were made on seven cases as to the number of red and white cells, percentage of hemoglobin, differential leucocyte counts before and after seizures, and also on animals, both before and after inoculation with defibrinated blood of epileptics,

with a view of ascertaining the degree of toxicity common to epileptic blood. From these it would seem that there is in idiopathic epilepsy a fairly well marked chlorotic type of anemia. There was also a leucocytosis. The differential count showed a decided reduction in the polynuclear cells, but there was no increase in the lymphocytes, as is the case where the change is induced by malnutrition, starvation, etc. The red cells were approximately normal in number, but there was a moderate degree of poikilocytosis present, and this finding was especially marked where the hemoglobin was greatly reduced. These examinations, therefore, do not reveal any conclusive evidence of a change per se in the cells themselves in the epileptic. Injections were then made into the peritoneal cavity of rabbits, of blood as drawn from the patient and also where it was defibrinated. The results were about the same. In a typical case the hemoglobin rose from 65 to 84 per cent. and then fell to 44 per cent. seven days after the last injection. The leucocytes after several injections rose to the enormous number of 162,800 per cm., previous to which the rabbit was very sick, being rigid and tremulous. This must show some extreme toxic condition of the blood of the person from which it was taken. The leucocytosis disappeared, however, within two days. There were no corpuscular changes noted in the patient, therefore if the blood changes were due to alteration in the blood, it was principally in the serum. The authors believe that presumably some hemolytic enzyme is a part at least of the pathogenesis of essential epilepsy.

**Syphilis and Tabes.**—In a lengthy communication on this subject, W. EMB (Berl. klin. Woch., Jan. 25, 1904) reviews the statistical evidence which has been brought forward and comes to the conclusion that tabes in the great majority of cases is undoubtedly a disease of syphilitic origin, but at the present time it cannot be definitely proved, although very probable, that this is true in every instance. Among his own series of nine hundred cases, only about three per cent. failed at some time or other to show symptoms of syphilis. He thinks that these may be included under "syphilis occulta." Methods of cytodagnosis, combined with lumbar puncture, may, in the near future, aid in giving us more definite information. The author believes, however, that there are many doubtful cases where true syphilis was questionably present, and suggests that there may be some other toxin closely related to that of syphilis, possibly of an infectious nature, which may injure the nerve tracts in a similar manner. The final decision of the question must therefore be left to the future.

#### HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

**Toxins and Antitoxins of Fatigue.**—After many laborious experiments, D. WEICHARDT (Münch. med. Woch., Jan. 5, 1904) has finally succeeded in demonstrating a toxin of fatigue and its antidote. Since the toxin is most likely neutralized very rapidly in the system, only negative results were obtained when the blood-serum of exhausted animals was injected subcutaneously or intravenously into healthy animals of the same species. More success followed the use of muscle-juice; when injected with absolutely aseptic precautions, the animals died after twenty to forty hours, while the control animals remained alive. The toxins were very unstable and lost their activity when warmed up to 56° C. for two hours; if not warmed, the toxicity increased for forty-eight hours and then



gradually declined and disappeared, even if kept on the ice-chest under toluol. By means of intraperitoneal injection, an antitoxin could be readily obtained. This seems to be very stable and can even pass through the walls of the stomach without being altered.

**Dried Immune Sera.**—Every bacteriologist who has had to work with the diagnosis of typhoid cultures is aware of the trouble and difficulty connected with the immune sera. It is either necessary to preserve a set of sealed glass tubes containing serum of tested titer, which is broken for every test, or an immune animal must be kept in stock, and bled on occasion. These difficulties have been very ingeniously overcome by E. JACOBSTHAL (Arch. f. Hyg., 1903, Heft 3), by the preparation of dried and durable sera. Serum of a known titer is evenly distributed, with special precautions, on the surface of a piece of filter paper which has been ruled off into squares of definite and uniform size. By a simple calculation, the "titer" of each of these squares when dissolved in a given quantity of a salt solution may be determined. It is found that the paper has a uniform value, that it retains its power unchanged over long periods, that it is not injured by the cold of the ice-box, nor by heat of 100° F., prolonged for three-quarters of an hour. The utility of the discovery is, therefore, bound to be very great.

**A New Method of Determining Albumin.**—There is as yet no rapid and accurate method of estimating the amount of albumin in a body fluid. The Esbach is very unreliable and the methods of Kjeldahl, Jolles and the gravimetric estimation entirely too complicated for the ordinary laboratory. E. REISS (Arch. f. exp. Path. u. Pharmak., Vol. 51, No. 1) has discovered that solutions of albumin possess a definite index of refraction and the percentage can be easily determined by means of a refractometer, with the aid of certain tables. A great advantage lies in the fact that only a single drop of fluid is required. Thus, in the case of blood, it is only necessary to fill the capillary tube of the Fleischl apparatus, then to seal it and to remove the dot after one-half to twelve hours. The drop of serum which remains will be amply sufficient. In a number of cases examined, the albumin of the blood was below normal, wherever the general vitality was reduced, irrespective of the disease from which the patient suffered. In acute infectious diseases there is no evident relation with the course of the infection but more with the duration and the severity of the disease. An amount of albumin less than 6.5 per cent., and in the presence of edema, less than 5 per cent., is a very unfavorable sign. The lowest figures were obtained in nephritis, even without anasarca. The hemoglobin of the blood is generally reduced earlier than the albumin and its estimation is of more value except in the more advanced stages of chronic disease, in acute infections and in nephritis. The method is equally as valuable for exudates, transudates and cerebrospinal fluid, but different tables must be used; for urine, the proper coefficient has yet to be determined.

**Influence of Salt on Gastric Secretion.**—Salt when given in fairly large doses, invariably causes a diminution of acidity in the gastric secretion and quantities of about seven grams have the same influence in man, according to M. BÖNNINGER (Münch. med. Woch., Jan. 22, 1904). There may be some advantage in the therapeutic use of salt for hyperacidity; it is certainly preferable to sugar, since it does not influence the motility of the stomach to such an extent, though it lacks nutritive value. The digestion of proteids is also inhibited by the chlorides; they share this property with the sulphates, which interfere with digestion even in weak dilution. This does not, however, argue against

the use of mineral waters for gastric disorders, as these are generally taken in the morning, on an empty stomach.

**Experimental Inoculation of Endocarditis.**—A case of fatal subacute infectious endocarditis caused by the pneumococcus was observed by C. LESIRVA (Jour. de Physiol., Nov. 15, 1903), in which death was ushered in by a cerebrospinal meningitis. Cultures taken from the blood during life, and from the endocardial vegetations and meninges at autopsy revealed the presence of the pneumococcus. A rabbit inoculated with the pus containing the latter developed vegetations in the mitral valve. A second rabbit inoculated with blood taken from the heart of the first developed similar lesions in the mitral valve. The most interesting fact derived from these experiments is that the pneumococcus may display a tenacity to produce endocarditis in spite of the fact that it has to traverse channels and tissues ordinarily more susceptible to its pathogenic influence, thus becoming a special microbe of endocarditis. This phenomenon is evidently one showing the adaptation of a germ which is frequently a simple saprophyte in the saliva, to produce morbid changes in a special tissue.

**Gastric Mucous Membrane in the Esophagus.**—If the esophagus and stomach are preserved in Müller's fluid combined with formalin, flat epithelium can be readily distinguished from glandular by the color; the interior of the stomach will be tinged deep brown while the inner lining of the esophagus will take on a much lighter hue. H. SCHRIEDER (Virchow's Archiv, Vol. 175, No. 1) draws attention to certain islands in the esophagus which are rendered especially prominent by this method since they stain like the lining of the stomach. They were found in 70 per cent. of the cases examined and occur especially in the lateral folds of the upper portion. Microscopically branched tubular glands, lined with cylindrical epithelium, are found in these islands. The character of the cells and their nuclei, their power of secreting mucus and the occasional presence of border-cells give evidence of a close relation to the normal glandular structures in the lower portion of the esophagus and cardia. In two cases the areas were so large that they might have been regarded as small stomachs in the upper part of the esophagus. Probably these structures and the normal flat epithelium of the esophagus are genetically distinct; the former merely represent the remnants of the original lining which was not replaced by stratified epithelium as this began to proliferate downward. The islands were also sought for in a large number of mammals with negative result. A second article on the same subject is presented by A. RÜCKERT who states that these glandular erosions are often wrongly diagnosed by pathologists as decubital ulcers. They are of importance in that they may give rise to an adenoma or a carcinoma and frequently lead to cyst-formation. They probably play no part in the development of diverticula, as some claim.

**Elastic Tissue of the Spleen.**—If studied with the Weigert stain, the spleen will be found especially rich in elastic fibers, but great care must be taken to properly differentiate the sections in alcohol, else structures such as the walls of the veins will also take the dye though only ordinary connective tissue. In studying the elastic tissue in pathological spleens, B. FISCHER (Virchow's Archiv, Vol. 175, No. 1) finds that it may remain unaltered as in infarction or may simply stretch as in acute enlargement. In cir-

cumscribed inflammation such as in tuberculosis or abscess, a destruction goes on, and if the swelling is excessive (leucemia, amyloid degeneration) it may be difficult to find any elastic fibers. New formation goes hand in hand with proliferation of the ordinary connective tissue in chronic hyperplasia and also in shrinkage of the organ. Several varieties and degrees may be distinguished: (1) Compensatory new-formation. The relation of elastic fibers to the total organ here remains about normal. (2) Simple hyperplasia, where the percentage is above normal but the hypertrophy involves only parts which normally contain elastin. (3) Fibro-elastic induration. Connective tissue and elastic capsule into the parenchyma. This is seen most frequently in syphilis. (4) Elastic hypertrophy of the capillaries. The capillaries are surrounded by dense sheaths of elastic fibers. Occasionally met with in the amyloid spleen, more often in leucemia. The different forms may be combined in various ways.

**Experimental Pathology of the Liver.**—By ligating the hepatic artery, R. TISCHNER (Virchow's Archiv, Vol. 175, No. 1) could bring out the development of necrotic foci throughout the liver due to thrombosis of the portal branches, increase of leucocytes and leucocytic capillary thrombosis, secondary to diminished vis a tergo. General connective tissue hyperplasia does not occur under these conditions; even hyperemia of the fibrous tissues is absent though local induration is seen in the larger infarcts and wherever the bile stagnates. The fat is increased within the necrotic areas but disappears toward the interior of the lobule. Similar necrotic foci also follow if the common duct is tied off; the cause here is the increased resistance offered to the flow of the blood in the portal system by the stagnation of bile. General connective tissue hyperplasia will begin in the periphery of the lobule and gradually spread toward its interior; circumscribed foci are, however, less common, since larger areas of necrosis occur only shortly before death. The fat behaves as above and the diminution in size of the organ is caused by its disappearance. Large doses of phosphorus administered rapidly will bring about sublobular necroses while the capillaries through the liver are filled with leucocytes. These changes and the increased and slowed flow of blood are best explained by a chemical irritation of the splanchnic nerve. Small doses continued over a long period are followed by hyperplasia of the liver cells and connective tissue, also induced by irritation of the vascular nerves, leading to slight hyperemia with acceleration of the blood-flow. If fatal, the pathological picture shortly before death will resemble that of acute intoxication.

### PEDIATRICS.

**Sudden Death during Infancy.**—Nothing has a more depressing effect upon the physician than the sudden death of a child apparently in the best of health. An autopsy will generally explain the condition: either the child has died while vomiting or else it has been suffering from capillary bronchitis or toxic gastro-enteritis. The part played by the thymus gland in causing compression of the trachea in rachitis, has been much overestimated, but undoubtedly many cases of glottic spasm are due to an acute swelling of this organ. In others death sets in rapidly with cyanosis, dyspnea and convulsions, and at autopsy nothing but a large thymus, not causing compression of any important organs, is found. Here the thymus is merely a symptom of a general lymphatic constitution and death is most probably due to cardiac failure in individuals possessing abnormally low powers of resistance. Such cases

are of great medicolegal importance, since murder or, in individuals of more advanced age, suicide may be suspected; but the presence of a large thymus at autopsy will clear the case. Another form of sudden death, rarely mentioned by authors, is spoken of by E. FERR (Correspbl. f. Schw. Aerzt., Jan. 1, 1904); it is the eczema death in infants suffering from extensive skin eruption, eczematous in character. Its etiology is as yet unknown.

**Exanthemata Following the Injection of Diphtheria Antitoxin.**—This question is discussed by OBERWINTER (Deut. med. Woch., Dec. 31, 1903), who describes several cases where an eruption followed the injection and was at first believed to be due to the antitoxin. Later developments showed, however, that they were cases of true scarlatina. He claims that an eruption which appears particularly from the third to the fifth day should always be viewed with suspicion, for he has found that in most cases it was genuine scarlet fever and probably due to a dual infection with both diseases. The fact that the eruption begins at the site of injection is apparently no proof of its being due to the serum, although the author does not deny that a true serum exanthem may assume the form of a scarlatinal eruption.

**Pulmonary Complication of Measles.**—Measles is generally a harmless disease, yet rightly feared on account of its pulmonary complications, when occurring in epidemic form, since the mortality then is apt to exceed 40 per cent. C. HART (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 1 and 2) has had opportunity to study a large number of lungs at autopsy and finds that the appearance differs considerably from that of ordinary bronchopneumonia, for though typical areas of consolidation are unmistakable, the cut surface has a peculiar ragged appearance and dilated bronchi are abundant. The lower lobes were frequently consolidated in toto and the pleura often participated in the process, though not to a marked degree. The most important lesions are found in the walls of the bronchi which show epithelial desquamation, swelling of the submucosa, intense congestion and hyperactivity of the glands. Later on, the walls become infiltrated with round cells and the muscle and elastic fibers will gradually disappear so that dilatation can readily occur. The alveoli surrounding the bronchi will participate in the process and soon young connective tissue appears to replace the destroyed tissues. The contents of the alveoli varies considerably, but most often there is an intense desquamation of alveolar epithelium. If the process is especially severe, reactive suppuration does not occur and the bronchial walls with the adjacent parts of the lung undergo necrosis. The appearance of connective tissue forms an interesting feature, for it can often be noticed that young granulation tissue spreads into the lumen of the bronchi and alveoli wherever these are bared of epithelium, thus leading to an obliterating inflammation. Probably many cases of emphysema and chronic bronchitis in early life must be ascribed to a previous pneumonia secondary to measles.

**Opothrapy in Kidney Disease.**—A maceration of kidney substance in all diseases accompanied by urinary insufficiency is highly praised by M. J. RENAUT (Bull. de l'Acad. de Med. de Paris, Dec. 22, 1903). The only disadvantage lies in the fact that maceration must be prepared fresh daily. These kidneys, preferably obtained from the hog, are freed from all attached tissue, minced and then digested for four hours with 450 ccm. of saline solution. The decanted fluid is consumed by the patient in three or four doses during twenty-four hours. The albumin will decrease.



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No. 111 FIFTH AVENUE, NEW YORK.

Subscription Price, including postage is U. S. and Canada.

PER ANNUM IN ADVANCE . . . . .	\$4.00
SINGLE COPIES . . . . .	.10
WITH THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, PER ANNUM . . . . .	8.00

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**SATURDAY, MARCH 5, 1904.**

## TYPHOID IN GERMANY.

CARLYLE compared the advance of the world to the progress of some drunken man, who, reeling from one side of the street to the other, slowly and at the expense of much wasted effort finally arrives at his destination.

To one who is familiar with the history of medicine, even in its latest and most glorious period of development; this comparison must appear to possess a certain element of truth, touched, indeed, with the dyspeptic complexion of its author. There is scarcely a great acquisition of medical science regarding which opinion did not for some length of time oscillate between extremes, only eventually to reach and maintain the middle course of truth. And surely this is no disgrace. "To err is human," and, in view of this racial weakness, to weigh and test every opinion, and finally to reject the false and to retain the true, is the bright distinction of the scientific spirit.

Nevertheless, there are some opinions which even the most liberal are prone to regard as fixed and proven for all time. Such was the theory of the communicability of bovine tuberculosis, which had become established, apparently beyond the possibility of cavil, by the researches of Gerlach, Klebs, Chauveau, Bollinger, and others, in the

early seventies of the last century. Yet Koch attempted, at a stroke, to sweep away the entire fabric as a cobweb. No less firmly imbued is the medical fraternity, whether clinicians or bacteriologists, with the conviction that typhoid, and especially typhoid epidemics, are due to infection through a contaminated water supply. And yet it would seem that this theory, also, has not the adamantine foundation with which it had been credited. In the February 20 and present issues of the MEDICAL NEWS are to be found a communication from a correspondent ("Typhoid Epidemiology"), wherein it is subjected to a criticism which might appear bold, were it not adequately sustained.

The writer, an American who had the good fortune to be engaged in the service of the German government as regular "Assistant" in a typhoid laboratory in Elsass, gained exceptional opportunities to study the development of the epidemics which were at that time prevalent. After a careful study of all the factors involved, he found himself driven to the conclusion that the water supply played no part in the dissemination of the epidemic, but that the infection was in each case communicated from man to man by personal contact.

The latter brings home an idea which is by no means new, inasmuch as it is now more than a year since Koch propounded the theory of "contact infection" in typhoid, but which is still somewhat foreign to Americans. The great German bacteriologist asserted that practically every case of typhoid was due to transference of infected material, either mediately or immediately, from the person of one victim to the mouth of the next. It appears, however, that the theory is not original even with Koch, but goes back far into the dim and ante-bacteriological days of medicine, since the clinicians of the earlier part of the century, among them Bretonneau and Trousseau held firmly to it. Be this as it may, it cannot be expected that the modern and deeply rooted theory will be abandoned without very convincing proofs as to its falsity. Admitted that the Elsass epidemic was traceable to a series of contact infections, as seems quite probable from the data so fully presented, it by no means follows that all other epidemics, many of which occur under vastly dissimilar conditions, are to be put in the same category. It may, indeed, prove to be true that "contact-infection" plays a far larger rôle in all epidemics than had hitherto been suspected; this is a question

which only a careful series of observations can adequately settle, but the evidence must first of all be thoroughly weighed and sifted. The question is one of such great importance to the race, that it behooves the medical world to make haste slowly—to creep, rather than stagger—like the drunkard of Carlyle, to the ultimate goal of truth.

#### THE PANAMA COMMISSION AND PROPHYLACTIC MEDICINE.

THE Committee on Medical Legislation of the American Medical Association has indicated the keystone of the arch in the Panama Canal Commission. Surgeons, engineers, contractors, no matter how deserving of honor, nor how efficient in their work, will fall into what has long been called the "grave of the European" if they are not supported, nay more than that, controlled, by a medical officer who shall have full authority in carrying out the work of sanitation.

Our readers have but to refer to the article by George A. Soper, Ph.D., on Sanitary Aspects of the Panama and Nicaragua Canals, printed in the MEDICAL NEWS of January 4, 1902, to realize the importance of the request made by the American Medical Association, to President Roosevelt, that he appoint a representative of the medical profession upon the Commission.

Such work as was performed in Cuba by Dr. Walter Reed, can and must be done on the Isthmus if the work is to succeed.

The French failed for lack of man-power to put the excavations through. There were not enough natives to employ. The imported laborers from Jamaica fell sick and died, or gave up work in fear of death. The services of laboring men from the United States could not be counted on for three successive months, for before the end of the second month one-half of the force was on the sick list. In April and May of 1882, 37 engineers out of less than 100 died, and in September, 1884, it is said the Canal Company buried 654 officers and men.

There is no need that the new Panama Canal Commission should learn by personal experience the bitter lesson that the brave but fated French Company left behind it. Health, in what has been called the "Pest House of the Tropics," is the first essential to success. The mere presence of physicians and drugs will not ensure it; nothing but a rigid enforcement of sanitary laws under systematic authorized supervision will save to the Commission an adequate working force. The old French Company made the fatal mistake at first,

of charging the contractors for the care of men in the hospitals, which policy kept many men at work when they should have been under medical care.

With this record of the first Panama Company's inefficient struggle against the fevers, dysenteries and depressing effects of the climate of the Isthmus it is a relief to turn to the contribution to the MEDICAL NEWS, made in the issue of April 12, 1902, by Henry L. Abbott, Brevet Brigadier General U.S.A. (Retired). He translated the statistical report presented by Dr. Lacroisade, the Medical Director of the new Panama Canal Company, in which it is shown that the percentage of disease and mortality among the new Company's employees was reduced in 1901 to about one-third of what it had been in 1881.

The message of Dr. Soper, after his residence in Panama was emphatic. A department of health, such as established by the Suez Canal enterprise, must be established in the Isthmus, with more than usual power of enforcing sanitary laws. The work of this organization must be not merely critical, it must be an active constructive organization. "It should," he says, "include the procuring and protecting of pure water supplies, and the prompt and permanent disposition of the daily wastes which will occur among the thousands of laborers who will be gathered together in camps and settlements." Hospitals along the line of work must be established, medical inspectors must examine the laborers to detect the presence of illness. Hours of work must be regulated, habits controlled, diet and housing overseen by the department of health, and the contractors must submit to a military-like enforcement of labor rules, such as is wholly unknown in our equable climate if they would keep their officers and laborers in working condition.

But the health of the employees as a means to the triumphant achievement of the Panama Canal is not the chief reason why medical men so strongly urge the President to appoint a medical officer on the Commission; it is the health conditions that are likely to occur when the canal is completed, that are the most serious menace to the country.

The short cut for commerce offers just as short a cut to disease. The cholera from Hongkong, Calcutta and Bombay, the plague from China and India, the fevers of South America will all converge to those narrow waters, and will be communicated by sailors who will want to spend a few hours on shore and catch up with their vessel.



by train. Only the most rigid inspection and well-established quarantine stations will prevent the canal from becoming a focus of disease. Once let plague, cholera and yellow fever get a footing among the population that will settle along the completed canal, and instead of being a boon to commerce the waterway will become a curse; for no matter if a ship comes from a clean port, she would not be admitted by the quarantine officers of any healthy city, if she had just spent a day and a half in an infected country.

We consider that it is of the utmost importance as an economic measure that a medical man should be numbered among the members of the Commission and that detailed preparations should be begun at once, in harmony with engineering projects, so that the builders may begin their work with an efficient sanitary and medical organization.

It is noted that Col. W. C. Gorgas, of the U. S. Army and its expert in tropical diseases, has been called in consultation with the members of the Commission and will in some measure have charge of these sanitary problems. They could be entrusted to no better hands. However, if the President rises to a full appreciation of the economic importance of health in its bearing upon the success of this prodigious undertaking, both during its construction and thereafter, he will not hesitate to clothe Col. Gorgas with the dignity and authority of a full member of the Commission.

#### AUTOPSIES IN PUBLIC HOSPITALS.

ASSEMBLY BILL No. 227, recently introduced into the legislature by the Hon. W. Y. Robinson, at the request of the Superintendent of the Craig Colony for Epileptics is "An Act to Amend the State Charities Law in Relation to Autopsies at the Craig Colony for Epileptics," and is as follows:

"Section XI. Have power (the Superintendent), subject to the supervision and control of the Board of Managers, in case of the death of any patient at such institution, who shall have been maintained therein wholly at the public expense, to make, or cause to be made, an autopsy on the body of such patient."

There is every reason, in our opinion, why this Bill should become a law. Germany is admittedly the leader to-day in scientific medical research. This is largely due to the fact that autopsies are permitted on the bodies of all patients who die in the public hospitals. Artificial and sentimental objections should no longer be permitted to stand in the way of scientific investigations, carried on for the benefit of the entire hu-

man race. There is a vast amount of valuable material at the Craig Colony that ought to be freely at the pathologist's disposal.

This Bill is unquestionably a step in the right direction. We hope it will pass and receive executive approval, and that the time is not far distant when a similar general law applicable to all public institutions in the State may be enacted.

#### A NOVEL ASPECT OF THE ALCOHOL PROBLEM.

THE laborious investigations and the animated controversies on the physiologic, therapeutic and economic phases of the alcohol question, must, temporarily at least, surrender the stage to an aspect that has but recently presented itself to the speculative mind. In the concluding remarks of his report on alcohol treated from the standpoint of the chemist, in the "Report of the Committee of Fifty," Prof. Abel, of Johns Hopkins University, although strongly emphasizing the effects of alcohol as a highly toxic agent, finds it impossible to advocate the doctrine of total abstinence, on the ground that those who have not the physical or moral power to resist a tendency to excess, will in the long run be eliminated from the race for existence; in this way there would be evolved a human species possessing a higher degree of stability and invulnerability than at present. The same view has been recently echoed by Dr. Woods Hutchinson, before the Oregon State Conference of Charities and Correction, who extols alcohol as a virtue, as a powerful factor for the elimination of the unfit from society.

This ingenious application of the doctrine of evolution arouses the close attention of the sociologist no less than that of the biologist and clinician. A safe working hypothesis in solving many a scientific riddle, natural selection would seem in this instance to add another triumph to its list. Close analysis, however, reveals that here the principle of natural selection is misapplied.

There can be no doubt that alcohol has shattered the hopes and destroyed the lives of thousands and that it has succeeded in accomplishing this because it has encountered individuals enfeebled by the hereditary influences of psychical degeneration and by the physical and mental stresses of civilization. Bearing the mask of a kindly friend, a power to allay pain, relieve misery and produce the sensation of physical well-being, alcohol has, to be sure, acquitted itself as a skillful executioner, alluring its victims to gradual dissolution and branding the marks of degeneration upon their descendants.

This theory presupposes that he who falls prey to the fell hand of alcoholism is himself the bearer of the birthmark of degeneration. That this is true in a large proportion of cases cannot be questioned. Yet is it not a common experience that lives that have given promise of a healthy physical and mental development, have frequently succumbed to its insidious influences? Certain adverse circumstances of temporary illness, distress or pain, rather than hereditary influences, have in not a few instances been the determining factors of many a case of morphinism and the like. This is probably no less true of alcoholism. Not only is this condition not solely dependent on degeneration for its production, but it is also one of the most potent influences that make for degeneration.

Instead of being hailed as an instrument with which nature threshes out the unfit from society, alcohol should rather be credited with but a limited sphere of influence in this connection. Its operations are far from being universal. Who would venture to assert that all degenerates are alcoholics, that all those whose numbers swell the ranks of the insane and the criminal classes are addicted to alcohol? To be sure, this treacherous drug is one of the chief causes of insanity and crime, yet the very fact that criminals and the insane are not always such because they have been alcoholics, proves the imperfection of this agent as a universal factor of elimination.

If nature requires toxic and pathologic agents as aids in the furtherance of her cosmic design, is it necessary to single out alcohol when tuberculosis decimates the ranks of the physically unfit and when a host of other infections lie in wait for those who come into the world with but a meager inheritance of resistive vitality? If it be admitted that these also are in the long run beneficial to the evolution of a better race, as is claimed for alcohol, then the art of medicine will no longer have any excuse for existence and treatment will be unjustifiable. One is here brought face to face with the same thought that presented itself to Huxley and Spencer, namely, that it is impossible to reconcile the processes of evolution with the aims of ethics. The conclusion is inevitable that alcoholism should be placed in the same category with other diseases as insidious foes of humanity, and it is in the interest of society to seek the real significance of the various factors such as predisposition, environment, climate and contagium, that lie at the basis of all of them, with the object of their extinction.

## ECHOES AND NEWS.

### NEW YORK.

**Dr. Peterson Resigns.**—Dr. Frederick Peterson has sent to Gov. Odell his resignation as a member of the State Commission in Lunacy. Dr. Peterson is President of the board and states that the duties of the position interfered with his private practice.

**Clinical Assistants at Gouverneur.**—The Trustees have appointed Dr. Stella Stevens Bradford and Dr. N. Gilbert Seymour Clinical Assistants to the Tuberculosis Clinic, Out-Patient Department of Gouverneur Hospital.

**Opening of Medical Club Rooms.**—The library and club rooms of the Eastern Medical Society in Clinton Hall, 151-153 Clinton Street, near Grand, were opened on Tuesday evening at 8 o'clock. Addresses were delivered by Dr. Abraham Jacobi, former Judge Julius M. Mayer, Dr. Kenneth M. Milliken, and Dr. Joseph D. Bryant. A concert and supper followed.

**Ratification of Unification Plans.**—Up to March 1, the following County Societies in New York State have ratified the Joint Resolution of the State Society and State Association, Albany, Cayuga, Chemung, Dutchess, Franklin, Kings, Monroe, Oneida, Onondaga, Ontario, Rensselaer, Schenectady, Broome and New York.

**Odell's Care of the Insane.**—According to the *SUN*, "the 'business' Governor's unbusinesslike administration of the affairs of the State insane hospitals has culminated in the resignation of Dr. Frederick Peterson of New York City from the office of President of the State Commission in Lunacy. This, of course, is but the logical outcome of the Governor's methods of dealing with the insane in this State. The memorandum filed by the Governor when he approved the bill abolishing the boards of managers of the hospitals for the insane and centralizing the management in the hands of the State Commission in Lunacy at Albany, purported to give the reasons for such approval, but it bore on its face the readily distinguishable earmarks of the Hon. Goodwin Brown, a former legal member of the State Commission in Lunacy, who is reputed to have prepared it at the 'business' Governor's behest. Mr. Brown, it may be recalled, failed of reappointment at the end of his term as State Commissioner in Lunacy, although many powerful wires were worked in his behalf, because Gov. Roosevelt, to a considerable extent guided by the advice of the State Charities Aid Association, concluded that a change would not be prejudicial to the public interests. So William Church Osborne was appointed in Mr. Brown's place. In this memorandum the Governor says:

"No department of government should have more earnest consideration than this which controls a population of over 23,000," and in his arguments in behalf of the measure he said it was much better to take the power away from the boards of volunteer managers and to place it in the hands of men who could give all their time to the work. This is what the Governor said to the public. But his arrangement with the president of the Lunacy Commission was that he need give only two days a week to this work deserving such 'earnest consideration,' which includes the care of 25,000 insane people and an annual expenditure of approximating \$5,000,000. So Dr. Peterson took the place, continued to attend to his extensive private practice in the city of New York and to devote a fraction of his time only to the duties of his great office. Last winter the legislature was obliged to authorize the State Commission in Lunacy to employ a medical inspector at \$3,500 a year to relieve the president of the commission of a considerable portion of his work and responsibilities.



When Commissioner Osborne, the legal member of the Lunacy Commission, resigned his office because of disgust with Odellism in connection with the State hospitals and charities, Gov. Odell appointed the Hon. Daniel Lockwood of Buffalo to the vacant place. Commissioner Lockwood has a substantial law practice in Erie county, and he has been able to devote only a portion of his time to the affairs of the commission. With the 'medical' member and the 'legal' member of the Lunacy Commission giving so much time to their private business much of the work necessarily devolved upon the 'business' member of the commission, the Hon. William L. Parkhurst, of Canandaigua. Commissioner Parkhurst has doubtless done the best he could under the circumstances, with the advice and assistance of his fellow townsman, the Hon. John Raines, for whose entrance into politics Commissioner Parkhurst has said to have stood sponsor. But Commissioner Parkhurst, who really knew nothing about the insane until after he took office, is not as young as he once was, and for some time has not been in the best of health, so that the clerks in the lunacy department have had to run things to a considerable extent. Thus, despite the patching and other repairs, this beautiful machine designed by the Governor, with the advice and assistance of the Hon. Goodwin Brown, to give 'earnest consideration' to the care of the insane, has broken down to such an extent that important changes are urgently needed. As Commissioner Lockwood's term expires next December, it is said that the Governor during the present session will name the Hon. Goodwin Brown to succeed him. Then, with Commissioners Parkhurst and Brown as a majority of the Lunacy Commission, the Governor will have fully realized the political results flowing from his policy of centralization, and the medical member of the commission, no matter how reputable he may be, would be a nonentity so far as the administration of the affairs of the Commission in Lunacy would be concerned. Meanwhile it is pertinent to ask how the insane have fared under this system of neglect, with its large promise but lame performance. It is true that in the name of 'economy' they have been deprived of proper food, that they have been housed in three-story, non-fireproof structures, where formerly two-story buildings were used, and that the recovery rate shows a marked decrease. But who can ever know or tell the total amount of hardships and sorrow resulting from the change in management in the insane hospitals, so strenuously insisted upon by Gov. Odell?"

**In Honor of Dr. D. B. St. John Roosa.**—A number of distinguished men of this and other cities, including the foremost members of the medical profession, and of those prominent in literature, the law, finance, and the commercial world, gave a dinner in honor of Dr. D. B. St. John Roosa, "and to commemorate the twenty-one years since the inauguration of post-graduate medical instruction in this country," at Delmonico's, last Tuesday evening, March 1. Dr. William Osler, of Baltimore, presided at the dinner, which was given by the following gentlemen: William T. Bull, M.D.; Francis Delafield, M.D.; Bache Emmet, M.D.; Virgil P. Gibney, M.D.; Edward G. Janeway, M.D.; Wm. M. Polk, M.D.; A. A. Smith, M.D.; A. H. Smith, M.D.; Robert F. Weir, M.D.; Albert Vander Veer, M.D., Albany; A. W. Calhoun, M.D., Atlanta, Ga.; W. H. Welch, M.D., Baltimore; W. S. Halsted, M.D., Baltimore; C. I. Blake, M.D., Boston; M. H. Richardson, M.D., Boston; W. W. Keen, M.D., Philadelphia; J. H. Musser, M.D., Philadelphia; J. C. Wilson, M.D., Philadelphia; G. B. Johnston, M.D., Richmond; W. J. Mayo, M.D., Rochester, Minn.; James W. Alexander, Edward T. Bartlett, Cornelius N. Bliss, William D. Howells, Morris K.

Jesup, Edward King, John E. Parsons, J. Edward Simmons, J. H. Van Amringe.

Dr. Roosa has been president of the Post-Graduate Medical School since its establishment in 1882. There were eight physicians of this city in the decisive movement which brought about the establishment of the Post-Graduate Medical School. Dr. Roosa is the only one of the eight still connected with the institution. The seven others were Dr. William A. Hammond, afterward surgeon-general; Dr. James L. Little, Dr. Frederick R. Sturgis, Dr. M. A. Pallen, Dr. Stephen Smith, Dr. Henry G. Piffard, and Dr. J. W. S. Gouley. They were from 1875 to 1882 the post-graduate medical faculty of the University of the City of New York. As such they were working under marked disadvantages, which they realized completely, but were unable to overcome. This was what caused the failure of the movement. For a long time the faculty sought to bring about an improvement of conditions, the separation of post-graduate pupils from those not yet graduated, the proper distinction between first-year men and those of the second year, and between these and third-year men, and the upshot of it was that on April 4, 1882, the eight members of the faculty resigned. The resignations were accepted. Thus the Post-Graduate Medical School was born, the eight secessionists renting rooms in the old College of Pharmacy in Twenty-third Street, between Second and Third avenues, and going on with their work as if nothing had happened. For a year and a half they remained in Twenty-third Street, and then went into Twentieth Street, first renting and then buying the property now occupied by the Columbus Hospital at No. 226 East Twentieth Street. The next move was the erection, five years ago, of the fine structure at Twentieth Street and Second Avenue, which is a hospital with 207 beds, as well as a school for post-graduate instruction. Of the advantages of post-graduate courses, Dr. Roosa said: "Post-graduate medical instruction is an essential. The more thorough a man's training in his medical school has been, the more valuable to him is a post-graduate course. The character of the instruction in the Post-Graduate Medical School is similar to that given in such institutions in Berlin and Vienna, save that we have amplified it; in fact, in Prussia they imitate us now. We have between 600 and 700 pupils yearly, many from Canada, and occasionally one from Europe. Most of the pupils have been engaged in the practice of medicine, because when a physician or surgeon finds, for instance, that the demands of his practice are very great, say, by way of example, in a matter of surgery, he can come to this city, enter a post-graduate class, and make a most careful, exhaustive study of the particular surgical question. He can perform a desired operation two or three times upon the dead; he can assist when it is performed upon the living, and thus gain reliance and skill to enable him to perform it himself. We teach physicians how to do things. In their undergraduate work they watch their preceptors perform operations; in our work they perform the operations under the guidance of their preceptors. Also we teach laboratory work very thoroughly. This has become such an important factor in the medical science of the day that we devote a great deal of attention to it, for by its agency the medical profession has been able to determine many things of which, in former years, it knew but little. So, in order that a physician or surgeon may be able to do good work he must take a post-graduate course. New York's work in the direction has been followed by the establishment of post-graduate schools in Philadelphia and Chicago, and other cities. In my early days there was no such thing as post-graduate instruction in this

country, and in 1863 I had to go to Berlin and Vienna for a post-graduate course."

**Dinner to Dr. M. Nitze.**—On March 9 will be the twenty-fifth anniversary of the first demonstration of the cystoscope by Prof. Max Nitze. A committee consisting of Prof. Carl Posner, Dr. Hans R. Wossidlo and Dr. H. Goldschmidt of Berlin, has been charged to arrange a celebration of the occasion. A part thereof will be the presentation of an address, to which it is proposed to attach the signatures of those who have a general or special interest in genito-urinary diseases. The undersigned is authorized to obtain the signatures of those American colleagues who may desire to be thus represented in the address. As it will be impossible to obtain the signatures in time to reproduce them on the address, the committee suggests that a congratulatory cablegram precede them. The following cablegram is therefore submitted, to be cabled on March 9: "Professor Max Nitze, Berlin: Your colleagues and pupils congratulate themselves and the profession on the twenty-fifth anniversary of the demonstration of the cystoscope. Vivat Magister!" To be followed by the names of those who desire to have this done. The wording of the above cablegram will be changed in accord with such suggestions as may be made. Physicians desiring to have their names signed to the cablegram should address the undersigned. In such an event calculate 25 cents for each word of signature and address. F. Valentine, 31 West Sixty-first Street, New York.

#### PHILADELPHIA.

**Fire in Dental College.**—A fire which originated in an anatomical room of the Pennsylvania Dental College on February 24, damaged the building and contents to the extent of \$5,000. The 150 students and 30 patients who were in the building at the time succeeded in getting out safely. The loss was confined mainly to anatomical specimens, preparations, and charts.

**Wood Alcohol Found in Whisky.**—The discovery that wood alcohol is largely used for the adulteration of whisky in Philadelphia and vicinity has been made by the State Dairy and Food Commissioner. Prosecutions against dealers in the country districts have begun and others are to follow. Analyses show that more than 60 per cent. of the samples obtained by the agents contain a dangerous percentage of the adulterant.

**Local Nurses Will Go to Japan.**—It is stated that at a recent meeting of the local Red Cross Society it was decided to send ten trained nurses from this city to care for the wounded soldiers of Japan. A fund of \$5,000 must first be raised to fully equip the nurses for service. They are to be under the charge of Dr. Anita McGee, of Washington, D. C., but the whole management of the enterprise is to be assumed by the society of this city which is not in affiliation with the National Red Cross Society. Only nurses with Spanish-American war experience will be eligible.

**State Tuberculosis Commission Organizes.**—The commission appointed by the Governor to assist the State Live Stock Sanitary Board in formulating rules for the guidance of meat inspectors met at Harrisburg, February 26. Organization was effected by the election of Governor Pennypacker as President; Drs. C. B. Penrose and C. Y. White, both of Philadelphia, as Vice-President and Secretary, respectively. Sections were formed to report at a future meeting on the relation of bovine to human tuberculosis; foreign methods of dealing with tuberculous cattle; the pathology of bovine tuberculosis,

and methods of disposing of tuberculous meat and cattle in Pennsylvania. The next meeting will be held in April.

**Railroad Hospital Cars.**—Four hospital cars of special design are to be built for the Pennsylvania Railroad. They will contain a morgue, operating room, beds for the injured, supplies and quarters for physicians, nurses and attendants. The cars will be kept at the division terminals of Philadelphia, Harrisburg, Altoona, and Pittsburg and will be in readiness day or night to furnish prompt relief at wrecks.

**Report on the Butler Epidemic.**—At the meeting of the State Board of Health held February 27, a report on the recent typhoid epidemic at Butler was made and adopted. As a result of the epidemic, 105 persons lost their lives. The report contained the following recommendations: (1) The absolute necessity for the prompt reporting of every case of typhoid fever to the Health Department; (2) at least weekly bacteriological tests of the water supply, and the monthly patrolling by health officers of the watersheds of the State; (3) the insistence on the part of the health authorities that all water be boiled before being used in a community, when an unusual number of cases of typhoid develop; (4) the slow sand filtration of all water, as this system of filtration will intercept typhoid fever germs. The report was approved and 5,000 copies ordered to be distributed throughout the State.

#### CHICAGO.

**St. Elizabeth's Hospital Report.**—A report of the work done at this hospital during the last year has been issued. It shows that 2,240 patients were treated, no remuneration having been received in 411 cases.

**Requests of Health Commissioner Reynolds Denied.**—The Finance Committee of the City Council has denied the requests of Health Commissioner Reynolds for increases of \$15,000 for vaccination expenses; \$10,000 for antitoxin; \$32,000 for more sanitary inspectors, and \$2,500 for more tenement house inspectors.

**Original Research Regarding Human Perspiration.**—In a paper on this subject, Dr. Julius H. Hoelscher, of this city, details reports of experiments on the human perspiration under the influence of drugs and in certain pathologic conditions. After a thorough cleansing, he enveloped his subjects in sterile gauze and over this secured an oil cloth. The subject was then subjected to dry heat, not over 120° F., for one to two hours. When the point of tolerance had been reached, the soaked gauze was quickly removed, submitted to pressure, and the sweat collected, the amounts ranging from three to thirty-two ounces. He offers the following deductions from the experiments conducted: (1) The hot air causes an aseptic fever or temperature elevation, despite the antipyretic action of acetanilid, sodium salicylate and quinine. (2) The hot air bath is of decided value in acute and chronic uremia, shown by the fact that the perspiration contains a considerable excess of urea and nitrogen. (3) In articular rheumatism in conjunction with salicylates, the hot air bath gives more rapid results and lessens cinchonism. (4) Certain types of myocarditis seem to be benefited by the hot air bath, and he reports a case. (5) Pilocarpine should never be used without the aid of hot air applications to the body. So combined, there is no sialagogue and less toxic drug effect, and far more sweating than otherwise. (6) Three cases of



catarrhal jaundice were sweated; all the tests failed to show bile pigments, only the epithelial debris containing bile deposits. (7) Modern sugar tests failed to reveal sugar in the sweat from diabetics. (8) A case of chronic constipation and indicanuria did not disclose the presence of indol or skatol in the sweat. (9) As regards the function of eliminating normal and abnormal substances, the skin is not to be compared with the kidneys. (10) Free sweating seems to favorably affect psoriasis, though further study is required, as also the effect on other skin diseases. Lastly, 1,000 c.c. of sweat contains about 11.5 gm. of solids (nearly 3 drams), one-half inorganic and one-half organic, and about .6 gm. (9 grains) of urea and .47 gm. (8 grains) of nitrogen.

**The Use of the Cystoscope in Catheterizing the Ureters as a Means of Diagnosis in Surgical Diseases of the Kidneys.**—Dr. Louis E. Schmidt read a paper on this subject before a recent meeting of the Chicago Medical Society. He stated that examination of the bladder, catheterization of the ureters, examinations of the functional activity of the kidneys by examining separately the collected urines, especially with the aid of cryoscopy and radiography give almost certain information by which one may be safely guided in this field of operative work. As to cystoscopy, every diagnostician agrees as to its true value in this work. With the help of the cystoscope the presence of only one or of two ureteral openings can be determined, and whether or not clear, turbid, blood-tinged, or colored urine is being secreted from one or both sides. The appearance of the ureteral orifices, torn after the passage of stone, as reported by Halban, inflammatory signs of the mucosa, or tuberculous processes, papillomatous growths about the urethral orifice may designate descending processes. After inhibition per mouth of methylene blue, the urine becomes tinged green in from fifteen to thirteen minutes in the case of a normally secreting kidney. The greater the amount of parenchyma destroyed, the longer the time which elapses previous to the appearance of the tinged urine. Voelcker and Joseph have injected 16 centigrams of indigo-carmin into the gluteal muscles. It begins to make its appearance in the urine in from fifteen to thirty minutes. It has the advantage of being excreted solely by the kidneys, and is harmless. The same authors gave individuals iodide of potassium and filled the bladder with a solution of peroxide of hydrogen containing starch. As soon as the iodide of potassium was being excreted, the urinary whirl became of a bluish color. Where catheterization of the ureters or segregation is impossible or undesirable, where the ureteral openings cannot be seen, it is possible by means of a cystoscopic examination to make some deductions as to the functional activity of the kidneys when considering the foregoing points. Besides, it is possible to ascertain approximately the functional activity by watching the frequency and force of each contraction, the quantity of urine which is expelled at each contraction of the ureter, and also some idea as to the ascent or descent of the whirl when the bladder is filled with fluids of varying specific gravities. Reference was made to the use of the different segregators. After considering the advantages and disadvantages of the various methods, the author said that ureteral catheterization is constantly becoming more popular. While he does not care to make a comparison of segregation and catheterization of the ureters, he believes there are but few, if any, authentic cases of infection of the ureter fol-

lowing catheterization. There can be no question in the minds of those who have followed the subject, and who have had practical experience, that the establishment of the functional activity by the examination of the urine gained by ureteral catheterization is the most important achievement in renal surgery. In addition, certain information which is of importance in every case is derived by ureteral catheterization, which any one of the segregators and cystoscopy alone cannot give. It is a method of diagnosis which can give valuable information in both ureteral and renal affections. Where a stone in the ureter has been diagnosed and the skiagraph shows it to be correct, Kolischer, Caspar, Hausmann, and the author have been able to inject sterilized liquid vaseline, which has been sufficient to cause contractions and to loosen the stone and cause the spontaneous expulsion of it into the bladder, and then subsequently to be passed naturally per urethram. It is not to be forgotten that when a catheter or bougie is in place, it can be used as a guide in ureterotomy, and also to locate and prevent traumatism of the ureter whenever bound down by tumors or inflammatory processes. Whenever performing a plastic or other operation, on the pelvis or kidneys, a bougie in place may serve as a guide. For draining the pelvis in cases of pyelitis and flushing it out and treating it, nitrate of silver, or other solutions have long been in vogue, and in some cases with positive results.

#### GENERAL.

**Cars for the Tuberculous.**—Consumptives may be barred from first-class Pullman cars on the Santa Fé Railway. The plan involves the running of hospital cars at intervals on through trains. These cars will be specially equipped, and no one except sick persons will be allowed to ride in them. This innovation in train operation will be put into effect between Chicago and Kansas City to Colorado and New Mexico health resorts, and to California points, over practically the entire system. The care of consumptives has always been a burden to the railroads. After a berth has been occupied by a consumptive, it must remain unoccupied until the end of the run, when it is disinfected. This precaution for the care of health of the traveling public involves expense.

**Dr. Gorgas for Canal Commissioner.**—The Committee on Medical Legislation of the American Medical Association has asked the President to appoint on the Panama Canal Commission a representative of the medical profession, and has recommended Col. William C. Gorgas, a surgeon in the army, for the place. It is urged that "under both of the French administrations at the Isthmus the engineering problems themselves, to the chagrin of the medical profession of the world, failed of accomplishment largely through the frightful mortality among officers and laborers consequent upon lack of authority on the part of medical officers entrusted with the work of sanitation; that the same conditions of insalubrity exist now that existed then, and that consequently the sanitary problems are to be recognized as second in importance, if second at all, only to those connected with the engineering department."

**Prof. Loeb's Studies in Infection and Immunity.**—Dr. Jacques Loeb of the University of California has thrown some light upon the problem of infection and immunity from disease in recent experiments made in the fertilization of the egg of the sea-urchin with the sperm of various species of star-

fish and holothurian. The key to Dr. Loeb's hypothesis is found in the fact that fertilization in different cases has been found to depend upon slight variations in the constituents of the sea water used. Arguing from this, Dr. Loeb says there is reason to believe that the predisposition to infection in the human body may depend on equally slight variations in the constitution of the liquids of the body. The presumption, then, is that when the right variations are found and the manner of producing these safely and surely is determined, science's great battle against disease will be near an end. It is reported that taking the eggs of the sea urchin, Dr. Loeb, in his laboratory at Berkeley, has been able to fertilize them with the sperm of such species of starfish as the asterias, the brittle-stars, and the twenty-ray starfish; also with the sperm of the *Holothurian cucumaria*. Hybridization of different species was sometimes possible under these conditions, and sometimes impossible. The addition of a small amount of sodium carbonate to sea water made a new series of differences, all of which have the greatest significance. Dr. Loeb generalizes from this fact as follows: "The fact that the possibility of fertilization depends on the presence or absence in the surrounding solution of mere traces or very minute quantities of certain substances gives rise to the idea that the main variable determining the entrance of the spermatozoon into the egg may be of the nature of surface tension or a function of the latter. This idea would also harmonize with the fact that there are great individual variations in the sperm of the starfish of the same species in its power of fertilizing the egg of the sea urchin. These facts may have some bearing on the problem of infection and immunity. Especially that which we call the predisposition for an infection may depend on equally slight variations in the constitution of the liquids of our body as the variations on which the fertilization of the sea urchin eggs with the sperm of the star-fish in sea water depend. If our supposition be correct that in the latter case the controlling variable is of the nature of surface tension, it stands to reason that the variable in the case of the individual predisposition for infection is also of this nature."

**Proposed Army Medical Reserve Corps.**—"The position of contract surgeon in the army is sought to be abolished by a bill introduced by Senator Proctor on the recommendation of Surgeon-General O'Reilly," says the *Evening Post*. "The army employs at present about 200 contract surgeons, who are civilians, and cost the Government more than would an equal number of young commissioned officers. This does not include the physicians who are occasionally called in for short periods for such services as the physical examination of men at recruiting stations. The position of contract surgeons is anomalous in many ways. Irrespective of their professional skill the common soldiers do not regard these men in the same way as the regular army surgeons. They are not treated as officers, and, though they wear a uniform, it bears no insignia of rank. In place of the body of contract surgeons, Senator Proctor's bill creates a 'medical reserve corps.' The President is authorized to issue commissions as first lieutenants in this corps to graduates of reputable schools of medicine, who are properly qualified. Contract surgeons now in the military service, if recommended by the surgeon-general, are eligible without further examination. The holder of a commission in the medical reserve corps is to have the authority, rights and privileges of a commissioned

officer of the same grade in the regular medical corps, except as regards promotions, during the time he is actually called into active duty. The pay and allowances of first lieutenants of the medical corps shall be given to them for the same period. The system is made flexible by a clause providing that no officer of the medical reserve corps shall be ordered into active duty, if he is unwilling to accept such service, and by another clause which permits such officers to serve with the militia or volunteers, or in any other capacity under the national Government. The cost of the change, according to the surgeon-general's estimate, would at first be no greater than under the present system, though at the end of four years it will cost some \$50,000 more. The problem of supplying medical service to the army is in many ways a peculiar one. A civilian surgeon may be perfectly competent to attend to wounds in a hospital and look after such purely professional duties, but his experience does not fit him for the administrative part of his work—the organization of field hospitals, the transportation of the wounded, and such purely military matters. Even for such work as examining recruits, civilian physicians are not always equipped. Many, of course, have served as life insurance examiners, but the point of view of that work is different. The insurance company wants to insure the applicant if this can be done with but little hazard, while the Government does not want to take any chances whatever with a recruit. Defects, often, which impair a man for military service do not shorten his life. Thus in many ways it is of great value to have on call a body of men who are somewhat experienced in the particular kind of work that they may be required to do for the men of the army."

#### **Tenth International Congress of Ophthalmology.**

—The Committee of the Tenth International Congress of Ophthalmology has authorized Prof. Dr. A. Siegrist, of Bern, Director of the Ophthalmological Clinic of the University, Bern, with the preparations for the appropriate exhibition of all scientific apparatus, instruments, and the various appliances for instruction, which will be sent to the Congress. He therefore requests all colleagues, as well as all scientific, optical and mechanical firms who wish to exhibit any objects at the International Ophthalmological Congress in Lucerne to apply to him before July 1, 1904, giving an exact statement of the object to be exhibited, of the space demanded, and of the kind and strength of electric force which may be required. Objects which are announced later can only be accepted as far as the space at disposal will still allow.

#### **First French Congress of Climatotherapy and Hygiene of Towns.**

—As has already been announced, this Congress will be held at Nice, April 4 to 9, under the presidency of Professor Chantemesse, of Paris, member of the Academy of Medicine. The members of the Congress will be allowed reductions (50 o/o and upward), the greater part available from April 1 to 20, 1904, on the great railway lines of France, the south of France and Corsica; on certain English railways (London to Paris) on the steam-liners, running between Nice, Marseilles, Corsica, Genoa; on the Italian railways; on sleeping-cars in France and abroad. Reduced prices have already been conceded at the chief hotels in Nice, Beaulieu s/m, Cannes, Mentone, Monaco, etc., a list of which will be supplied, on application to Dr. Camous, 2 rue de l'Opéra, Nice, specially charged with this matter. Outside of Nice, the members of



the Congress will officially visit Monaco, Mentone, Cannes and Grasse, where fêtes and excursions will be organized in their honor. His Serene Highness, the Prince of Monaco, will hold a reception at the palace, and there will be a gala representation at the casino. At Nice, besides the reception by the authorities, there will be gala representations (opera, etc.). The number of places, limited in the theaters, will be reserved to the first booked. After the close of the Congress, excursions will be organized. Medical students, the families of the members, accompanying the latter, and adhering to the Congress (special ticket, 10 frs.), will enjoy the same advantages. In order to take part in the Congress, it suffices to remit to Dr. Bonnal, Treasurer, 19 boulevard Victor Hugo, Nice, the amount of the subscription (20 francs), together with names, qualities, titles, exact address very legibly written, and accompanied with the subscriber's visiting card. Members desirous of making any communication are requested to send the title and summary of it (30 lines in 8vo) to the Secretary-General before February 20, so that they may be published and distributed before the meeting of the Congress. For further information, apply to Dr. Hérard de Bessé, General Secretary, Beaulieu s/m, Alp-Marit.

#### OBITUARY.

Dr. OGDEN LUDLOW, of New York, died last Wednesday of typhoid fever.

Dr. R. J. WILDING, of Malone, N. Y., Secretary of the State Medical Society, died suddenly Wednesday night of heart disease, aged sixty-seven years.

Dr. DAVID D. TOAL died on Friday last. He lived at 151 Avenue B and was known to nearly every man, woman and child in the region. Dr. Toal was born in Ireland 66 years ago. His parents brought him here when he was two years old. They were poor, and he managed to educate himself by working in a shop and studying nights. He was graduated from the University Medical College in 1867, and began practice in East Eleventh Street.

Dr. EMORY POTTER, the leading Prohibitionist in Saratoga County and chairman of the county committee, died suddenly of heart failure at his Elmwood Hall home on Saturday night. He was stricken with pneumonia on Tuesday last. He was a native of Union Valley, Cortland County, N. Y., and made Saratoga Springs his permanent home twenty-seven years ago.

#### CORRESPONDENCE.

##### OUR LONDON LETTER.

(From Our Special Correspondent.)

LONDON, February 13.

THE MEDICAL EXAMINATIONS OF THE UNIVERSITY OF OXFORD—PROPOSED SAFEGUARD AGAINST LIVE BURIAL—LONDON SCHOOL OF MEDICINE FOR WOMEN.

In a previous letter mention was made of Sir John Burdon-Sanderson's resignation of the Regius Professorship of Medicine at Oxford, and of the fight for the vacant chair that followed thereupon. The teachers of the Faculty are anxious that the Chair of Medicine should be converted into one of Pathology, which they wish to see filled by Dr. James Ritchie, at present Reader in that subject. The medical graduates of Oxford, of whom there is a considerable body in London, are strenuously resisting this proposal, on the ground that a man is wanted who has a practical knowledge of the requirements of the medical practitioner and of the de-

tails of qualifying examinations in accordance with the standard approved by the General Medical Council. The true inwardness of the situation is that a year and a half ago the clinical parts of the Oxford Final Examination for the degrees of Bachelor of Medicine and Surgery were pronounced to be seriously deficient by the Visitors of the Council. The Oxford men naturally resented this criticism, but could not wholly deny its justice. They laid the blame for the shortcomings of the examination, however, on Sir John Burdon-Sanderson, who, it was alleged, had neglected his duty. Sanderson, it should be stated, is devoted to pure science. He walks through life, striking the stars with lofty head, as Horace says, and taking no heed of the practical applications of scientific truths. He is absent-minded and forgetful of things which he looks upon as trifles, and those who know him best are most ready to believe that, with the highest aspirations and the noblest motives, he has failed to bring his mind down to earth in the matter of examinations in terrestrial matters like medicine, surgery and obstetrics. Such "bread studies" do not interest him, and the result is that a standard of knowledge of the healing art such as might be expected in a great University has not been insisted upon. This is clearly shown by the Report of the Visitors, which is published in the *Minutes* of the General Medical Council for 1903, just issued. The Visitors state that they were present during the entire examination of five candidates in Clinical Medicine. The following is their account of the adventures of two of these: "The first of the candidates that we heard examined was taken to the bedside of a man who presented every appearance of being in an advanced stage of phthisis. The candidate was told to interrogate the patient; and—having elicited from him that he had pain in the chest, severe cough, and had wasted greatly—when asked what was probably the nature of the man's illness, said that it looked like one of cardiac disease. Some surprise having been shown at this answer, he expressed the opinion that the case might be 'gastric.' He was then told to examine the patient. He first proceeded to auscultate the heart. Asked why he examined that organ first after the personal history he had obtained, and if he had found anything there to account for the man's symptoms, he hesitated, and eventually said that there was no cardiac disease. He had then to be told to examine the lungs; and was asked if he noticed any difference in movement between the two sides of the chest in respiration, and other suggestive questions. Finally he said there was a cavity in the apex of the left lung, but he could not say on what signs he based that statement. He was then directed to examine the right lung, and asked if he could detect any evidence of disease there; and it was suggested to him as to the diagnosis that both the patient's lungs were affected, the left lung more than the right. The candidate was particularly defective in his ideas as to the treatment of pulmonary phthisis, in respect to the general advice to be given, the precise instructions for the patient, and special treatment for symptoms, e.g., cough. He was given 5 out of 20 marks for this case. His examiner showed him great consideration, and spent twenty-eight minutes with him on the case. This candidate's case for commentary was that of a young woman with double aortic valve disease. He wrote a fair report of the case, which he read out to the examiners, but he did not set down any diagnosis of the valvular lesion, although he gave the characteristic physical signs of it that were present. He was marked 15 out of 20 for this case, making a total of 20 out of the 40 marks assigned by the examiners for the clinical examination. Another candidate was told to examine the greatly enlarged abdomen of a boy and to make

out what the cause of the enlargement was. He did not ascertain, until the examiner told him, that the patient's liver was greatly enlarged. Asked what this enlargement was due to, he replied, "alcoholic cirrhosis." Told that such a cause was improbable in a young lad like the patient, he suggested, with equal impropriety, "lardaceous liver." The candidate was then directed to examine the boy's heart, and at once found "a murmur." (There was a double mitral murmur). He then said it was a "cardiac liver." Notwithstanding this candidate's deficiency in clinical acumen, he was given 10 out of 20 marks. His case for commentary was that of a young woman with nephritis, after probable scarlet fever. The report he wrote upon the case was fairly good, except that he gave neither diagnosis nor treatment. When examined orally on the case, however, he stated its probable nature. But he was "weak" on the pathological changes in the kidney in cases of scarlatinal nephritis and upon the prognosis in such cases as compared with cases of ordinary nephritis. He was able to contrast fairly the characters of the urine in different forms of renal disease. His mark for this case was 15. Total for clinical, 25 out of 40. The answer of this candidate to one of the questions on the medicine paper was endorsed by one of the examiners as being "very meager." Both these candidates passed. If these men are to be taken as representative specimens, it is not surprising that the Visitors reported that "the clinical work of several of the candidates was decidedly below the average; and in passing some of them the examiners . . . were inclined to be too lenient." In respect of pathology and bacteriology the examination was declared to be excellent; it was only in the practical subjects that it was deficient. It should be mentioned that men do not learn their medicine, surgery and midwifery at Oxford, but for the most part at the great hospitals in London; and the clinical examiners in the instance referred to were London men. The Visitors, Sir Christopher Nixon and the late Sir George Duffey, were both Dublin men, and it is probable that racial prejudice had a certain influence on their judgment. The same factor is seen at work when Scottish examinations are "visited" by Englishmen or Irish examinations by Scotsmen. But Oxford, whose medical degrees now stand highest in the estimation of the British public, should be above all possibility of reproach.

Every now and again some one makes the public's flesh creep with sensational statements about the danger of live burial. We have even a London Association for the Prevention of Premature Burial, which exists to impress the fear of this occurrence on people's minds. This cheerful body recently held its annual meeting, at which it was pointed out that, on the admission of the Home Secretary, 10,000 persons are buried every year in England and Wales without the formality of a death certificate; and that death certificates are frequently granted by medical practitioners without any careful inspection of the body, and without the use of any special tests to ascertain whether or not life is extinct. Often, indeed, the certificate is given simply on the information of some relative or friend, by a doctor who does not take the trouble even to view the body. With a view to remedying these evils the Association has drawn up a draft Bill enacting that no certificate shall be given without a personal examination and inspection of the body, and requiring the local sanitary authorities to provide waiting mortuaries in their respective districts. Mr. William Tebb, the president of the Association, in speaking of the difficulty of verifying cases of premature burial, said that in England there were about 800,000 burials a year, and only about one body in 50,000 was exhumed. He added that in the United States, where cemeteries were

frequently moved, however, a considerable number of bodies had been found in the coffins in such attitudes as proved that they must have been buried in a state of suspended animation. Moreover, he said, narrow escapes were constantly being reported; there was one case in which a lady, who was subject to trances, had twice been placed in her coffin. In an appendix to the Association's annual report a number of alleged instances of narrow escapes from premature burial are reported. At the meeting the startling announcement was made that there was a lady in the room who had twice been in her coffin, and who had her death certificate in her pocket at that moment. It appears that the lady is subject to cataleptic trances, which on three occasions are said to have placed her in imminent danger of live burial. Naturally, after so sensational a statement, she became the prey of the interviewer. To his eager ear she confided the following strange story, which I give in her own words, as reported: "My first trance was brought about by shock. I was told that all my property had been lost. The news was quite unexpected, and it sent me into hysterics. Then I passed into insensibility, and at the end of two hours my limbs began to assume the rigidity of death. My eyes were open, and I could see what was happening, but I was unable to move hand or foot or to show that life had not yet left my body. Imagine my horror, when, after being left for twenty-four hours, I was taken from bed and rolled on the floor. Pins and needles were stuck in my body in order to see whether blood would flow. Fortunately I could feel no bodily pain, but the strain on my mind was terrible. After this every one gave me up for dead. 'Poor lady, I am afraid she is now out of all earthly suffering,' I remember hearing the doctor say. Oh! the terror of that moment! Worse was, however, to come, for the order for my coffin was given. When the undertaker's men came to measure me I tried to shriek aloud, but not a sound came from my bloodless lips. I could not have been more helpless had the Angel of Death in reality taken my soul. The final agony came when my coffin was brought into the room. At sight of that gruesome object placed by my beside, I felt as if my brain—or what was left of it—would finally break under its futile efforts to assert itself. I then lapsed into unconsciousness for the first time for forty-eight hours." Her daughter, however, had never quite given up hope, and she rose from her bed in the middle of the night to visit her mother for the last time. As she gazed on the body she thought she saw a movement of the eyelids. Hastily summoning the servants, she held a bottle of strong smelling-salts to the nostrils, and in her agitation spilt part of the contents over the unconscious woman's face. "At this," said the lady, "I heaved a deep sigh, and suddenly sat up in my bed. Saved by my daughter's love and energy." The heroine of this story is said to be a "Doctor of Psychology"—a degree, by the way, unknown to the universities of this country—and the tone of her narrative would be sufficient, without the history of cataleptic trances, to show that she is highly neurotic. But, though the story is highly colored, there seems to be no reason to doubt its substantial truth. Perhaps the medical profession is a little too prone to scoff at the possibility of such occurrences. Yet in some cases, at any rate, similar facts are well authenticated. Some forty years ago there was a discussion on premature burial in the French Senate, and the subject was treated by most of the speakers in the usual spirit of skepticism. Then the Cardinal Archbishop of Bordeaux—Donnet, I think, was his name—arose and told how at a great ecclesiastical function in very hot weather a young priest fell down, to all appearance insensible. He was removed to his dwelling, but all attempts to revive him proved



fatle. He was pronounced to be dead, and in due course the body was placed in a coffin and taken to a church for the funeral. The supposed corpse heard all that passed, and was fully aware of the dreadful danger that threatened him, but could not move hand or foot, nor utter a sound. Just in the nick of time he heard the voice of a friend whom he had not seen since childhood. This quickened the paralyzed nerve centers into life, and saved him from a premature grave. The Cardinal's story was received with ironical laughter and calls for the name of the priest. A solemn silence came over the assembly when the venerable prelate replied, "Gentlemen, the young priest who thus narrowly escaped a hideous death now stands before you!"

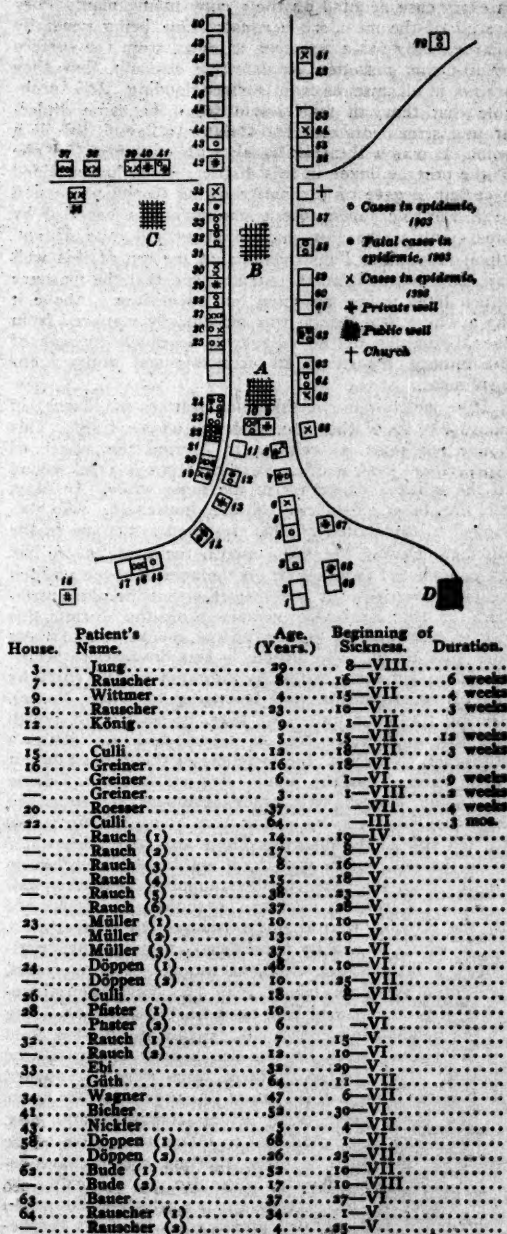
At the annual meeting of the London School of Medicine for Women, which was held the other day, the report of the Council for 1902-3 was presented. The record of the year's work was very satisfactory; no fewer than forty students passed their final examinations and obtained the legal qualification to practice. Twenty-two of these took the M.B. Degree of the University of London, four the M.B. Degree of the University of Durham, one that of the University of Edinburgh, eight the Diploma of the Society of Apothecaries, and five the License of the Conjoint Colleges of Scotland. Neither Oxford nor Cambridge yet admits women to degrees in medicine or in any other faculty. Several exhibitions and scholarships were also won by girl students, upon one of whom was conferred the distinction of the Fellowship of the Royal College of Surgeons of Ireland. Several hospitals and infirmaries have for the first time appointed women to resident posts. Miss Alice Johnson, M.D., was selected from a large number of candidates as Medical Officer to the Lambeth Poor-Law School at Norwood. The Polyclinic and Medical Graduates' College has decided to admit medical women to all its work on the same terms as men. There are at present 200 students working at the school. Of these a third will go abroad as medical missionaries, while the others will spread themselves over London and the Provinces. According to the Secretary of the School the prejudice against the woman doctor is fast dying in this country and she is now generally accepted on her merits. It cannot be said, however, that in a scientific sense she has so far justified her existence here; and in the field of practice only one or two female practitioners have won anything that can be called distinction.

### TYPHOID EPIDEMIOLOGY.

(Continued from Page 372.)

THE village of Rathweiler is built, as are the majority of the villages in Elsass, practically along one street, which is generally the highway of the district. It consists of 70 houses, the distribution of which is shown in the plan, copied from one prepared by the schoolmaster of the place. The houses themselves are generally of the most modest construction; the majority possess two stories, and no substructure. Except one or two, which are of stone, or partly of stone, all are built of wood. The buildings are so constructed as to accommodate both the owner's family, and the more valuable of his cattle, such as the horse and cows; the pigs and geese are, as a rule, relegated to the barn. As one enters such a building, one passes by a small door to one side of the entrance hall, into the stable, while, on the right, is the living room. On the same floor is the kitchen, and perhaps a sleeping room; on the floor above are other sleeping rooms. Closets or toilet rooms form no part of such an establishment. In the winter, the older members of the family make use of the stable, while the ejecta of the younger members are deposited in some

receptacle which is emptied either there, or on the "Misthaufen" (dungheap) in the yard. In the summer, the act of defecation is frequently performed out of doors. The washing of the family linen and eating utensils is very often performed at the wells, or in the yard, with water brought thither. Another element



in the hygienic conditions, to which some importance must be attached, is the ubiquitous "Misthaufen." Before every house is the dung heap, which is replenished as often as occasion demands from the feces of man and beast, which have accumulated in the stable. At the proper seasons this heap is piled into wheelbarrows or wagons, carted to the fields, and there applied as ma-

nure. When I protested against this most unsanitary method of disposing of the infectious material, the mayor informed me that the Misthaufen was the most valuable of the family assets: "Not even a beggar would stop at a door without its Misthaufen." The wells are of two classes, public and private; the location of both is in every case denoted on the accompanying plan. They are all of the most crude construction, being generally guarded only for a few feet, at most, from the surface by ill-fitting masonry, or defective cement; thus they are not at all immune from surface flooding. It is probable that they all take origin from the same underground stream or stratum of water, although this is a point on which I cannot speak with certainty. In one of the other villages in this district, which had attained a certain degree of prosperity owing to the possession of a valuable forest, the community was supplied by pipes with water from a well about  $1\frac{1}{2}$  mile distant. Upon inspection, I discovered that the top of this well lay about 4 feet from the surface, and that the masonry which lined it was anything but impervious. Above it lay a wheat field, which was periodically manured from the Misthaufen of the villagers. So much, by way of preliminary, regarding the economic and sanitary environment.

The epidemic in Rathsweller started in March, in house No. 22 of the plan, with the widow Culli. This house possesses its own well. During the month of April, there was another case of typhoid (the second in the village) occurring in the same house. In May, all the other members of the household, who belonged to the Rauch family, presented symptoms of the disease. During the same month the next house, No. 23, contributed two victims, of the ages of seven and ten years, respectively; it is noteworthy that the older members of this household remained healthy during this period, although in the succeeding month one of them also succumbed. The people in this house were accustomed to get their water, as indicated on the chart by the arrow, from the well belonging to house No. 24. During the same month of May, house No. 10, which lies just opposite to No. 22, contributed one victim, a Rauscher, to the list; the members of this household got their water from the public well marked A. During the same month, two other members of an allied Rauscher family, living a step from house No. 10, in No. 64, fell sick of the disease. These also took their water from the same public well A; it will be observed that up to this time the other families supplied from this well remained apparently healthy. In house No. 32, owned by the Rauchs, who are near relatives of those in No. 22, in which, it will be remembered, the epidemic originated, a little Rauch child, of the age of seven years, presented symptoms about May 15. Very soon thereafter, a person named Ebi, aged thirty-two years, living in the neighboring house, No. 33, and in No. 28 a child of ten years, named Pfister, also became victims of the disease. This last set of three cases were all supplied with water from well B; yet, at this time, no other house of the same water-supply group contained any case. It now becomes very difficult to follow the course of the epidemic, inasmuch as three different centers have become established, namely, house No. 22, house No. 32, and house No. 64. House No. 23, which in May had contributed two victims, presented a third in the beginning of June, and house No. 24 gave one in June, another in July. Houses Nos. 25 and 26 each had one typhoid patient in July. Within the succeeding months, the houses running in the opposite direction from Nos. 23 and 10, namely, Nos. 20, 12, 14, 15, 16, and 3, had also become infected. The second center, house No. 32, had a second case in June, as did also No. 28, and the house

directly opposite, No. 58. Houses Nos. 26 and 25, 33 and 34, 58, and 41 and 43, all had patients during July. From the third center, house No. 64, the infection reached No. 63 in June, and No. 62 had one case in July, another in August. This list about exhausts the cases in Rathsweller in the epidemic of 1902, at least so far as they were identified. As a pendant, I should like to relate the occurrence of two other cases, which historically, at least, belong to this epidemic. During July, the minister of the neighboring village of Bütten felt impelled by his spiritual calling to visit the stricken town of Rathsweller, which had no resident preacher. He had been warned of the danger of infection, and most scrupulously avoided touching his lips with food or drink during his brief visit of a few hours. Within two or three weeks, however, he developed a very severe typhoid, which remained the only case in Bütten, with the exception of his maid-servant, who fell sick shortly after him.

In describing the course of the epidemic, I have purposely presented it in the manner in which it seems to me to have made its progress, namely, from house to house. When a well becomes contaminated, and acts as a source of infection to the houses within the area which it supplies, we may reasonably expect two results: First, the typhoid appears like an explosion, and within a short time produces more or less of a pandemic. Second, fresh cases very soon cease to occur, inasmuch as there is a natural tendency of wells to self-purification, by virtue of the greater reproductive and vegetative activity of the non-pathogenic organisms which it contains. The epidemic of Rathsweller, however, presents neither of these characteristics; it ran for five months. During this period it crept from house to house, heedless, apparently, of such barriers as are afforded by an independent water-supply, as exemplified by houses Nos. 22, 23 and 24. In some cases, its career was modified by infections due to personal intercourse, as illustrated by the members of the Rauscher households; but in no set of cases does there seem to have been any relation between the water supply and the course of the epidemic. One is induced to conclude that in the epidemic of Rathsweller the circumstantial evidence points most strongly to a personal transmission of the infection, as long ago urged by Trousseau, and to the complete innocence of the water-supply in its dissemination. This is the more surprising, in view of the fact, as pointed out in the preliminary statement, that there was every possible occasion for the contamination of the wells by the surface drainage, which certainly carried particles of infected feces from the Misthaufen (dunghills).

If, then, Koch be justified in his assertion that "contact-infection" plays so large a rôle in these epidemics, it becomes important to inquire into the details of its workings. Koch himself supplies many instances. Nurses in washing or bathing typhoid cases may infect their hands or faces, and subsequently inadvertently transfer the particles to their mouths. Those who wash the infected linen are, of course, in particular danger. It is hardly necessary, perhaps, to explain that "contact-infection," so-called, does not imply the existence of an external portal of infection, e.g., the skin. It is admitted that the germs in every case enter the body through the mouth. The point emphasized by the phrase is that the infection is direct, not mediated by a common water supply. One who drinks out of an infected glass is, in this sense, the victim of a "contact-infection." As a rule, however, it would seem that the hands first become contaminated, and then carry the poison to the mouth. Thus it is that anyone who enters the sickroom, who touches the hand of the patient, runs the risk of



infection. Koch goes so far as to warn men against laying a cigar down in an infected house, for infected dirt and dust lodge everywhere. To me, it always seemed that the greatest element of danger is the Misthaufen. Here, if anywhere, the typhoid bacillus finds a favorable environment, and the opportunity to prolong its life. The children, playing on their hands and knees in the yard, are almost certain to pick up infection, and to carry it to more distant families, as illustrated in the epidemic. Moreover, the men of the household, in removing the dung to the fields, are again very dangerously exposed. This is a source of peril which, I believe, hardly exists under our own conditions. The important therapeutic and prophylactic deduction from all these arguments is that each case should, as far as possible, be isolated. The family and friends should be excluded from admission to his room or house, and one person should be made responsible for the nursing. The dead are also to be kept isolated, and to be buried as early as possible. All excreta are, of course, to be at once disinfected; a careful watch is to be kept over the urine, which is often swarming with typhoid germs for months after recovery. In addition to observing all these precautions, we employed the services of a disinfecter, who had to steam all the clothes and linen which had come in contact with the sick. These, and these alone, were the measures we took for controlling the epidemic; the water supply we completely neglected. Our results, nevertheless, were quite satisfactory, inasmuch as no new cases developed within two weeks after these prophylactic measures had been instituted. Parenthetically, I may state that many of the wells were frequently examined, chiefly by Altschuler's method, for the typhoid bacillus, but never with any success. This was done in the Strassburg Institute. I am, however, far from believing that such negative results may be taken as final evidence; the problem of identifying typhoid germs under such conditions has, unfortunately, not yet been solved.

In connection with prophylactic isolation, Koch has laid great stress upon the unidentified cases of typhoid, or typhus levisissima. These cases are not sick enough to go to bed, yet carry about with them enormous numbers of typhoid germs. Every epidemic is accompanied by such cases, which are marked only by very slight symptoms—malaise, headache, bronchitis, or diarrhea. Nevertheless, if the stools of these individuals be carefully examined, or their urine after a time, it is generally possible to isolate the *agens morbi* in the shape of the typhoid bacillus. It goes without saying that just these cases are most dangerous to the community, inasmuch as they act as carriers and disseminators of the infection. Naturally, the danger is greatest under such conditions as prevail in villages such as Rathswiler, and becomes minimal in large cities, with good sewage and drainage systems. This holds true, doubtless, of every kind of contact-infection; yet, as shown by hospital records, it is under all circumstances a factor to be reckoned as highly important.

I had originally intended to describe in some detail the work of the bacteriological laboratory in Diemerigen, but my letter has already assumed such disproportionate dimensions that this aspect of the "fliegende Station" must be excluded from consideration. I would but state that not only the Widal, but cultivation of the bacillus from the stools, urine, and, rarely, the sputum, were resorted to for the identification of every case of the disease.

Respectfully,

RICHARD WEIL, M.D.,

Pathologist to the German Hospital, New York.

New York, Feb. 4, 1904.

## THE MEDICAL SERVICE OF THE JAPANESE ARMY.

To the Editor of the MEDICAL NEWS:

DEAR SIR: During the war between China and Japan in 1894-95 Sir William Taylor, M.D., now Director-General of the Medical Service of the British Army accompanied the Japanese force in the capacity of Attaché. The outcome of his observations was a valuable Report on the Medico-military Arrangements of the Japanese Army in the Field. It may be of interest at the present time to give a brief summary of his conclusions. He formed the opinion that "the organization of field hospitals, dressing stations, and bearer companies in the Japanese Army, is very complete, and that the regulations go into and deal with their administration in great detail. Neither of these organizations, however, was tried severely during the war; indeed, instead of employing the authorized number of field hospitals the work was carried on well with under one-third of them. The positions of the dressing stations were well selected, their sections arranged, and the wounded attended to as well as in any well-organized hospital in time of peace. Straw was spread under the shade of trees for the reception section, the patients were given beef tea or such other restoratives as were considered necessary, the regulations as to arms, accoutrements, personal properties, etc., were carried out, and the wounded carried to the dressing or operating section in the order of severity of the wounds received. Taylor says: "I saw nine wounded men brought into one dressing station in ten minutes, and, in turn, all properly attended to and sent back to the field hospital, which was in a village about 300 yards off. Everything in the way of equipment was there, and all the requirements for antiseptic surgery after the most approved methods. The instruments were laid out in sterilizing solution, and plentiful supplies of antiseptic dressings at hand. The first field dressings were removed, if necessary, the wounds carefully examined and dressed again after such treatment as was considered necessary. The tallies were always first examined. On one or two instances they told of good work having been done in the fighting line, when the lives of several men were saved by the ligature of arteries, or the timely application of a field tourniquet. There was no confusion or hurry; everything was done quietly and in that way which shows that all concerned were quite conversant with the duties they had to perform, and thoroughly competent; in short, there was every evidence of that efficiency which can only be the result of the most careful and complete training. At Wei-hai-wie, on January 30, during the attack, the efficiency of the regimental medical organization and of the bearer companies was demonstrated in the most splendid way. A regiment which had advanced into the middle of a flat sandy beach on the south side of the harbor suddenly found itself under the fire of three Chinese ships and four torpedo boats, all of which turned upon it their quick-firing guns from a distance of not more than 300 or 400 yards; in a very few seconds many men had been killed or wounded, and it was evident the regiment would soon be annihilated. The men were then made to lie down, and soon after they began to crawl or walk off the beach and get into the shelter of a ravine at some distance; there the regiment reformed; the dead and wounded were still on the field. Before all the men had reached the shelter of the ravine the medical officers, one by one, and at some distance from each other, accompanied each by two or more stretchers and some attendants, were seen to walk in different directions across the beach in the face of an incessant fire of bullets, which plowed up the sand in every direction.

They picked up the dead and sent them back, attended to and dressed the wounds of those still living, and in twenty minutes, stretcher bearers, attendants, and medical officers, walking quietly and coolly away, had removed every dead and wounded officer and man from the beach, the Chinese ships having kept up a continuous and terrific fire upon them all the time. It was a splendid deed of heroism which can never be forgotten, and of which the Japanese Army should be proud; but it was done as a matter of course and in the routine of duty, and we who saw it, and could not resist shouting 'bravo!' have never heard it referred to or spoken of. It will, however, be an enduring proof of the efficiency in the field of the Japanese medical service."

With regard to hospital ships and transports, Sir William Taylor says: "There were no hospital ships for the army. There was one which accompanied the fleet. She was a steel screw steamship of 2900.59 gross and 1645.2 net tonnage, and 387 horse power. She had accommodation for 50 officers and 200 men. The officers' accommodation was in the first-class cabins, which were roomy, well lighted, and warmed with steam-pipes, and were well ventilated. Each cabin had two good-sized iron beds, or cots, with wire-woven mattresses. About half were on the upper deck, and were particularly light and airy. They were reserved for the serious cases. They were lighted, as was every other part of the ship, with electric light. An operating room had been made by throwing two of these cabins, on the port side, into one, and putting in large glass windows. A special electric light was fitted over the operating table, and there was also a movable hand light. There was a plentiful supply of water in the room, which was also fitted with all the latest modern appliances for the special purpose for which it was intended. The second-class cabins were kept for warrant and petty officers. They were of similar construction, though not so highly finished as the first-class cabins. Each cabin had four iron cots with wire-woven mattresses. They were well lighted and warmed by steam. The men were accommodated in the freight hold, and on the main deck forward. There was space for 50 men on the main deck forward, 80 on the lower deck, and 70 aft, under the first-class saloon. They lay on platforms,—not in bunks—raised about 18 inches from the deck. The space allowed for each man was 7 feet by 4½ feet. Each had a quilted mattress of cotton, a Japanese pillow, a pair of white sheets and two blankets marked with a red cross. The clothing for each consisted of a good flannel shirt and the usual wide-sleeved quilted, hospital gown, with a red cross on each sleeve. The patients were scrupulously clean and comfortable. There was a senior naval medical officer in charge, with six other officers under him, and a staff of pharmacutists and attendants. There was a well-equipped dispensary and a liberal supply of surgical appliances and materials. The officer in charge had only to ask for what he wanted in the way of equipment; there was no scale of supply. There was a very good form of stretcher on board for embarking and disembarking helpless patients. It was made of two long bamboos with canvas between, the latter kept stretched by two cross-pieces of wood with iron rings at each end, which slipped on to the bamboos and kept them apart.

"There were some well-equipped military hospital transports. At the beginning of the war, transports carrying troops were not provided with medical officers, or any establishment, and unless the medical officers (or some of them) of a regiment happened to be on board, there was no medical aid at all. Many soldiers and followers were thus sent in transports without medical assistants, further than what the captain carried in the medicine chest he carried on passenger service. Later, it

was found necessary to have a medical officer in each transport. He was generally a member of the Red Cross Society, and had as equipment a medicine chest belonging to the Society. There were also a pharmacist and two attendants, and a small quantity of hospital clothing. Besides the foregoing, after cholera appeared among the troops, appliances and materials for disinfecting were carried on board each transport, and when cases occurred at sea, that part of the ship in which it appeared was thoroughly disinfected, that is, as thoroughly as was possible in a crowded ship, during a voyage."

Under the head of Sanitary Arrangements, Sir W. Taylor says that "Although the regulations for the medical department in the field were called 'Orders for the Field Sanitary Service,' they did not refer to questions of sanitation at all. Such subjects as conservancy, latrines, urinals, prevention of the fouling of wells, or other sources of water supply were not dealt with. In short, there were no regulations with a view to ensuring satisfactory sanitary conditions. In practice, the same want of thought for all sanitary precautions, even the most ordinary, was evident. Hundreds of dead bodies were left for days where they fell, often in heaps, in the narrow streets and lanes of towns into which the army had entered to occupy permanently. Many hundreds were left lying for weeks, and even months, in the neighborhood of occupied towns, where, from the conformation of the country, all decaying or decayed matter must be washed down by the rain into wells. Even when it was thought advisable to bury them, it was done in such a perfunctory way that the burial was an outrageous farce. Bodies were heaped up in a shallow trench, not a foot deep, and merely covered with a sprinkling of earth, which the first shower must wash off. Some were thus sprinkled over without even the pretence of a trench; others were covered over in the drains for surface water. Corpses floated about in the harbor for days, or were laid in a shallow groove in the sand at low water, and washed up again when the tide rose. The surface soil all round such places was polluted, poisoned, and made pestilential, and only hot weather was wanted to make the atmosphere the same. Dogs scraped away the scanty sprinkling of earth in many of these cases, and tore the bodies to pieces, dragging the intestines all over the place; and, incomprehensible as it may seem, Chinese, belonging to the towns, looked on without thinking or driving the dogs from their ghastly feast upon the bodies of their own countrymen. Even in the neighborhood of hospitals the same indifference to surroundings, often painfully foul and noxious, was quite general. At one of the most important hospitals on the line of communications, the condition of the immediate neighborhood was so filthy that the stench was almost unbearable. Inside everything was clean and nice, but within a few yards of the entrance was a heap of filth which was the collection of months, or, perhaps, years, on which were lying rotten fish, dead cats, shellfish, and all sorts of similar things in every stage of putrescence. This seemingly universal indifference to the most insanitary surroundings existed till very near the end of the campaign. Later great activity was observed in sanitary measures, and everything was done to improve existing conditions. Temporary latrines and urinals were put up in different parts of the occupied towns, and drains made, sometimes, as at Kinchow, at very great expense. There, an elaborate system of drainage and sewerage was carried out, public latrines and urinals erected, and a regular system of conservancy established; wells were also cleansed and protected. The result was most satisfactory, as the town, which, at one time had every condition that was most likely to produce disease or epi-



demie, was almost free from diseases due to insanitary causes. It was no light undertaking to put into good sanitary state a town which had been occupied for hundreds of years by the filthiest people in the world, and their success at Kinchow only showed what the Japanese authorities could do when they took the matter into consideration, and made up their minds to attend to sanitation. It would be agreeable, as well as satisfactory, to be able to think that the neglect of ordinary sanitary precautions was at first due to uncertainty of occupation, or some similar cause, but that is not possible, for nothing could excuse the condition of the surroundings of some of the hospitals, as above described, even if they were only to be occupied for a few days."

Under the head of Water Supply, Taylor says that on a campaign like that in which the Japanese Army was engaged there was not much choice of water, and the troops were obliged to use what they could get. "Each battalion carries with it a box containing appliances and materials for the chemical analysis of water, and it is the duty of one of the medical officers to go on ahead to any proposed halting place, for the purpose of examining and reporting upon the water in the different wells of the place. That could not always be done in war time, but, when a village or town had been entered, no water was supposed to be drunk, or used for cooking, until the medical officer had reported upon it. Each battalion is directed to carry two wooden filters, bucket-shaped, with a layer of fine sand at the bottom, then one of coarse sand, and on the top one of gravel, each layer being separated by a piece of sponge cloth (? asbestos cloth). These filters were not always used. The water, it was ordered, should be boiled before being used for drinking, but that order was not always, or even commonly, carried out. It seemed to be nobody's duty to see it obeyed; besides, there was very often the greatest scarcity of fuel, so that the water could not be boiled. Each officer is supposed to possess a small pocket filter made of brass, filled with charcoal, with a piece of sponge over each opening between it and the charcoal. Two India rubber tubes were attached, one on each side, to small projecting openings in the brass; one of these tubes was put into the water and the other into the mouth. The Japanese, as a rule, drink very little water or, instead, I should say, very little cold water. They drink small quantities of the weak tea peculiar to the country, and that tea was always to be had with the army, except on occasions when men were away from the main body and all supplies. They were very fond of eating snow, and many of them devoured large quantities of it, but I could trace or hear of no cases of disease due to that practice."

The treatment of gunshot wounds is described in considerable detail. "The first field dressing consists of two folded pieces of corrosive sublimate gauze, a piece of waterproof paper, and a triangular bandage. That is the only protection until the dressing station is reached. There, a supply of almost every kind of antiseptic dressing—carbolic acid, corrosive sublimate, iodoform, boric acid, oakum, etc., was available. A solution of corrosive sublimate, 1:1000, was generally used for washing and irrigating wounds, which were often also dusted with boric acid or iodoform. They were dressed with a pad of corrosive sublimate wool, or with Dr. Kikuchi's straw ash pad. The latter was very extensively used, as being much more economical than the former, and could be made anywhere. It consisted of the ashes of burnt straw freed from all grit, and put into bags of antiseptic gauze, which were kept ready made in all sizes. It was applied directly to the wound and a bandage put over it. If there was little or no discharge from the wound, the pad was applied dry, but,

if discharging freely, the pad was first soaked with corrosive sublimate solution. When these pads were not used, which was very rarely, especially in the First Division field hospitals, the dressing consisted of corrosive sublimate wool, a piece of protective, some common wool, and a bandage. Drainage tubes were always used where necessary, and when the dressings were changed the wounds were always thoroughly well irrigated. Loose pieces of bone in a gunshot wound were never removed forcibly, but were left to come away in the discharge or irrigations. Although there was very often considerable overcrowding in some of the buildings used for hospital purposes, the rooms being small, the results of the above form of treatment were uniformly good."

On the whole, with the exception of sanitation, the Director-General of the Medical Service of the British Army forms a very favorable opinion of the medical arrangements of the Japanese army. They were well devised and worked excellently in practice. Their surgery and medicine were quite up to the standard of modern science; and in the matter of sanitation they showed themselves ready to learn by experience.

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February 15, 1904.

## SPECIAL ARTICLE.

### EXCURSIONS IN OLD NEW YORK MEDICINE.—IV.

#### THE ELGIN BOTANICAL GARDEN.

THE recent announcement that the Board of Trustees of Columbia University propose to sell the block between Forty-seventh and Forty-eighth streets and Fifth and Sixth avenues has recalled public attention to a very important old-time medical landmark in the city's growth. There are three other blocks in this neighborhood also owned by Columbia College, and these combined properties once formed the Elgin Botanical Garden which in 1801 was bought by Dr. Hosack and called the Elgin Botanical Garden, after the place of the birth of his father, Alexander Hosack, who was a native of the town of Elgin, Murrayshire, Scotland. When Dr. Hosack bought the ground it was far outside of the city, but now, after the lapse of a century, has become one of the most valuable pieces of property on Manhattan Island.

Some of the recent estimates of its present value are of great interest in this matter. One broker, who was approached on the subject, considered that exclusive of the Fifth Avenue frontage, a conservative estimate of all the property would be about \$2,000 a front foot. This would make a value on the side streets of nearly \$3,000,000, while the Fifth Avenue block front would be worth at least \$1,500,000, making a grand total value of \$4,500,000. This is probably too conservative an estimate. The property passed out of the possession of Dr. Hosack in 1814, who sold it to the State of New York. During the course of the negotiations for its sale, an expert in property of the time, under date of January 30, 1810, said: "In reply to your note of the 26th instant, requesting my opinion of the value per acre of your ground or garden, were I in want of such a piece of ground I should think it a good purchase at \$2,250, and not a bad one at \$2,500. In a few years I have no doubt it will be worth much more."

It is very evident that the expert in property had no idea of how much more it would come some time to be worth. A number of letters show that New York land in this vicinity at that time was worth between \$2,500 and \$4,000 an acre. Accordingly the botanical garden was sold for \$2,500 per acre, and the buildings thereon

for an additional \$24,300. The whole sum received by Dr. Hosack amount to nearly \$75,000.

A very curious bit of history is connected with the subsequent transfer of this plot of ground, that had formed the Elgin Botanical Garden, to Columbia College. Before the admission of Vermont as a State—this being the first one of the States admitted in addition to the thirteen original colonies, after the Revolution and organization of the Federal Government, New York claimed certain portions of land on the other side of Lake Champlain, which now constitute portions of Vermont. The territory had always been in dispute, but New York State, as if formally to assert her rights, had granted a township of land in this territory to Columbia College, which from being King's College, now came to be looked upon as a special protégé of the State. After the admission of Vermont as a State by the United States Government, the drawing of the boundary lines left this township on the Vermont side of the line and consequently nullified the advantage that Columbia was expected to derive from it. As compensation for this the botanical gardens were granted to the University. The whole story of the grant is to be found in a pamphlet known as a statement of facts relating to the establishment and progress of the Elgin Botanical Garden, and Subsequent Disposal of Same to the State of New York, by David Hosack, M.D., which was printed in New York by C. S. Van Winkle, of No. 56 Pine Street, in 1811. This pamphlet may be found in Volume VI of Bound Medical Pamphlets at the New York Academy of Medicine.

Dr. Hosack, in preparation for properly influencing the legislature to make this purchase, and giving them definite data as to the value of the institution and property, obtained the opinions of a number of learned scientific societies, especially of such medical societies as were then in existence. The act under which the purchase of the Botanical Garden was made by the State was entitled An Act for Promoting Medical Science in the State of New York. One of the most influential documents presented in favor of the act consisted of excerpts from the proceedings of the Medical Society of the County of Saratoga, of the Medical Society of the County of Ulster, of the Medical Society of the County of Dutchess, and of the Medical Society of the County of Niagara, which were, it is believed, the only county medical societies in existence at the time (this was 1809), though the State Medical Society had been established some three years before, mainly through the instrumentality of the members of the County Medical Society of Saratoga.

The resolution of the State Medical Society suggests an alternative method of obtaining funds in order to remunerate Dr. Hosack and preserve the Botanical Gardens for the benefit of the medical profession in case the legislature should refuse to pass the necessary enabling act. Their resolution, which runs as follows, shows that public lotteries had not as yet come into that State of objectionableness in which they now are: "Resolved, That the Medical Society of the State of New York do unite with the preceding public bodies (scientific societies of various kinds), in an application to the legislature to solicit them to purchase the Botanical Establishment of Dr. David Hosack, if consistent with the funds of the State; or otherwise to grant a lottery for his remuneration and the establishment be so managed under the direction of the legislature as may be most conducive to the diffusion of medical science throughout the State.

"Done by order of the Society at their meeting in Albany held the seventh day of February, 1810. Nicholas Romaine, M.D., President of the Medical Society of the State. John Stearns, Secretary."

This Dr. John Stearns, of course, would be the distinguished physician who was afterward the first president of the New York Academy of Medicine, and who was one of the chief organizers of the Medical Society of the State of New York. It is to him, as was noted in a previous number of Excursions in Old New York Medicine, that the medical profession owes the introduction to America of powdered ergot under the significant name of *pulvis parturiens*.

One of the arguments that influenced legislators most in the purchase of the Botanical Gardens was the fact that realizing the benefit to be derived from such an institution as Dr. Hosack had established, his being the first establishment of the kind ever attempted in the United States, at least three other States, Massachusetts, Maryland and South Carolina, had proceeded to the enactment of such measures as gave them the benefit of like institutions.

In closing this discussion of the sale of his botanical gardens, Dr. Hosack, after giving all the formal documents which passed between him and the legislature, as also the permits from the city for the closure of the streets that ran through this neighborhood, says:

"From the preceding documents, the reader will be enabled to form some opinion of the many difficulties I have had to encounter in the establishment of the botanic garden. It will also be perceived that as a useful and necessary institution, it has been sanctioned by the approbation, not only of the medical profession throughout the State, but by the learned of every profession, and by many others of our most respectable citizens; that in every instance, when introduced to the notice of the legislature, it has met with a favorable reception, and has always been considered as deserving of legislative provision; that during the discussion which took place, in the last and the preceding years, relative to the purchase of the establishment by the State, the most influential members, both of the senate and assembly, however divided in their political sentiments, united in giving it their decided and liberal support. It will also appear from an examination of the act which was passed, that the purchase of the garden was to be made upon a fair and equitable valuation; that such valuation has accordingly been made by five of our most respectable citizens, chosen by the commissioners of the land office—that the appraisers formed their opinion of the value of the property, not only from their own personal knowledge, but also from the estimates which they received from many other reputable and disinterested individuals; and that, after a due examination of the condition of the act, they considered the delay of payment as constituting a necessary part of the valuation—that they accordingly formed their estimate of the property, amounting, exclusive of the plants, to the sum of \$103,137, which estimate was presented to the commissioners of the land office in June, 1810. It has also been stated, that at a meeting of the commissioners of the land office in September following, the appraisers were called upon to designate the value of the garden, exclusive of any allowance for the delay of payment; and that the appraisers, in reply, stated the value, exclusive of any allowance for the distant period of payment, in other words, the price if paid for in cash at the time of the purchase, at \$74,288.75—that at a subsequent meeting of the commissioners of the land office, held in the month of October following, they made me an offer of the last-mentioned amount—that I acceded to the terms proposed, and immediately contracted with the corporation of the city for a release of the quit rent, and of the streets that had been reserved upon the property; and that, having thus obtained a perfect title, the contract with the State was thereupon completed."

Dr. Hosack then adds, with regard to the real value



of the property, data, which show that his sale to the State was really dictated by unselfish motives.

"I have already observed, that I was influenced, in my acceptance of the terms proposed, by two considerations: First, that the legislature, in their construction of the terms and spirit of the act that had been passed, would agree with the appraisers in the propriety of including the interest of the purchase money in their valuation, for the period of time to which the payment might be deferred; secondly, that I accepted the same as a duty to my friends, to whose kindness I had been indebted, and by whose aid I had been enabled to support the establishment. But when the legislature are informed, that independent of the time and attention which I have bestowed on that institution, for nearly ten years, exclusive of the enhanced value of the property since its first purchase, and the additional expenses I have since incurred in obtaining a release of the streets that had been reserved by the corporation, that my disbursements, with the addition of simple interest for five years, have exceeded the sum I am to receive, at the time provided by the act, upward of \$28,000, I feel the fullest confidence that the same liberal views which induced the legislature to make so large and honorable an appropriation for the promotion of science, will also incline them to sanction the appraisalment as at first presented to the land office. To their decision I respectfully submit."

Quite apart from any monetary considerations, it is with eminent propriety that the Assembly Hall of the New York Academy of Medicine is called after Dr. Hosack, who was beyond all doubt one of the most professionally faithful and distinguished medical men that the New York profession has ever had among its members. Now that current events and interest in this property have called popular attention to Dr. Hosack once more (his name and career have surely always been familiar to the members of the medical profession, who are interested in the history of medicine, as they should be), a short sketch of his life and times will be given in the near future, for he lived at a transition period when stirring events disturbed the monotony of existence, and once, at least, during the famous Doctors' Mob in New York Dr. Hosack was in danger of his life, simply because he was a medical student.

## SOCIETY PROCEEDINGS.

### NORTH BRANCH PHILADELPHIA COUNTY MEDICAL SOCIETY.

*Stated Meeting, January 13, 1904.*

The President, Samuel Wolfe, M.D., in the Chair.

**Physicians' Relations.**—This was the subject of the address of the retiring chairman, and was read by Dr. H. Brooker Mills, who, after remarking upon the value of the organization of branches of the County Society in this city, considered the subject of "Physicians' Relations," (1) to their patients; (2) to the fellow members of the profession, especially consultants; and (3) to themselves. In regard to the first question, he believed that many unnecessary complications could be avoided by properly "training" the patient. In regard to the second question he deprecated the practice of the division of the consultant's fee with the attending physician, and believed that the same should be regulated according to the patient's ability. In regard to the physician's duty to himself, he urged that the medical man take sufficient rest to enable him to perform services of the highest character.

**Thorough Organisation.**—Dr. A. M. Eaton in discussing this paper urged the importance of thorough

organization of the medical profession, believed that more attention should be given to the business side, and also felt that through organization, much of the imposition which is practised by the undeserving upon the hospital clinics could be avoided.

**The Diagnosis and Treatment of Internal Hemorrhoids.**—This was the title of a paper read by Dr. Herman A. Brav, in which he defined hemorrhoids as varicosities of the middle and superior hemorrhoidal veins sometimes associated with eversion of the rectal mucous membrane, and always accompanied by more or less pain and tenderness. He divided them into (1) capillary hemorrhoids; (2) arterial hemorrhoids, and (3) hemorrhoidal tumors, which may also be termed, respectively, the first, second and third stages. In view of the fact that these conditions are also accompanied by hemorrhage, pain, protrusion and discharge of mucus, internal hemorrhoids are frequently confounded with cancer of the rectum, polypus of the rectum and prolapse of the rectum. The conflict is particularly apt to occur in children, in whom polypus and prolapse are not uncommon, and internal hemorrhoids, while they do occur, are rare. Polypus and prolapse can be distinguished from hemorrhoids by a careful digital examination, which will reveal the presence of a pedicle to which the growth is attached, and malignant disease can be distinguished by the hard growths on the rectal wall. He reported the case of a woman, aged seventy years, which had been diagnosed as internal piles, the patient having suffered from rectal hemorrhages, and a constant desire to evacuate the bowels. Digital examination in the lateral and semi-prone position revealed nothing, but digital examination in the erect position with the patient straining down showed a malignant stricture about four inches above the anus. He also referred to the case of a boy in which a polypus had been diagnosed as internal hemorrhoids. The first stage of the hemorrhoidal development is the most difficult of diagnosis, and in many cases aid will be secured in this direction by making the examination immediately after the bowels have been emptied by means of an enema and having the patient strain down.

In regard to the treatment, he remarked that this should be considered with reference to the cause of the condition, which may be either constipation, retroversion of the uterus, foreign body in the rectum, pregnancy, straining during micturition, as from stricture or enlarged prostate. He divided it into two heads, the palliative treatment and radical cure by means of operation. He did not believe that palliative treatment was effective in the third stage, but felt that it was successful in the first and second, and recommended that in all cases the cause of the condition be ascertained and removed, if possible. Constipation should be avoided, the diet regulated, and alcohol and tobacco used only in moderation, if permitted at all. Mild aperients, massage of the sphincter, and the injection of two ounces of olive oil at bedtime, are beneficial in regulating the bowels. Hemorrhage is most efficiently relieved by the application of cold astringents. After each defecation cold water should be injected and the addition of 10 grains of tannic acid is very efficient. As a means of palliative treatment he uses an injection of five to ten drops of a solution composed of one part of pure carbolic acid; two parts of glycerin and two parts of water. He frequently injects two or three tumors at a time, but did not recommend that more than one be injected by the novice, and the sittings should be a week apart. Following this treatment, the tumor gradually lessens in size, and in a few weeks the pain and discomfort will disappear. In the cases of strangulated piles, immediate operation should be

performed, but if the patient will not permit this, applications of lead water and laudanum lotions afford great relief, and reduce the edematous swelling, so that the piles may be replaced. He described fully the operation he performs. After tying the piles with a ligature, he does not cut them off, but inserts a rubber tube in the rectum and keeps the bowels confined for about four days, after which action is secured by means of purgatives or enema, if necessary. Next to the ligature operation, he believes the clamp and cautery operation, as performed by Henry Smith, to be the best. The patient should be kept under observation for at least three weeks after the operation, being allowed about the room after the first week or ten days, but should be in a recumbent position most of the time for the balance of the period.

Dr. Collier Ford Martin, in opening the discussion on this paper, referred to the treatment of hemorrhoids, which is of value in some cases, i.e., stretching the sphincter. He felt that it was very difficult to diagnose hemorrhoids by digital examination, and alone, and stated that the method he had found most effective was the employment of a small conical or tubular speculum. In regard to the treatment by injection, he was not inclined to view this as a palliative measure, but believed that in cases adapted to its use, practically all should be cured. In fibroid piles, however, the operative treatment is very much better. In regard to the sloughing following injection, he did not believe that this was a consequence of this method of treatment, but was due to the fact that proper aseptic precautions were not employed, or too strong a solution used, or too much fluid, and it is also well in all cases in which there is the least tightness or irritability of the sphincter to divulge the same under nitrous oxide prior to the injection. The injections should be made through a tubular speculum, one at a time, and the sittings should be a week apart. He believed in the weaker solution, and he is at present using the French phenol-sodique. The piles usually disappear in about two or three weeks after the operation. He had had no experience with the ligature method.

**Electro-thermo Cautery.**—Dr. Frank C. Hammond referred to the electro-thermo cautery used by Dr. Andrew J. Downes, and stated that he had seen some eight or ten cases of hemorrhoids operated on with this instrument that complained of absolutely no pain. He also stated that he had seen one case operated on which was burned considerably; this, however, was done by an inexperienced operator, to which he attributed the burning rather than to any fault of the instrument.

Dr. Brav, in closing, stated that he did not believe a speculum was necessary to diagnose internal hemorrhoids, but that they could be better noted by a digital examination with the trained finger. In regard to the injection method, as compared with operative procedure, he believed that in order to secure a radical cure, it was necessary to inject fifty or sixty drops of carbolic acid, as the injection of a smaller amount, while it will relieve the patient, will still leave a small hardened tumor, but which will give rise to no discomfort under proper dietetic and prophylactic measures. For the radical removal of the piles he believed the ligature method was the best, and that following it came the clamp and cautery, the difficulty of the latter method being that you are apt to include healthy mucous membrane, and if too much is removed, it may lead to stricture. He stated that he had not employed the electro-thermo cautery.

**Appointment of Dr. Gorgas.**—It is reported that Dr. Gorgas has been appointed sanitary medical expert for the Panama Canal Commission.

## MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

### SECTION IN CLINICAL MEDICINE AND SURGERY.

*Stated Meeting, held January 15, 1904.*

**Laparotomy for Gun-shot Wound.**—Dr. Robert Johnson reported this case, the last of a series of five operated on during the year, without a death. Patient was a colored boy who had been shot in the abdomen and when seen one hour later was in great shock; no pulse being palpable at the wrist. Just before the accident he had eaten ice cream and cake. The wound of a 32-caliber bullet was found in Poupart's ligament and led into the abdominal cavity. Laparotomy was done through a median incision; thirteen perforations in the small intestines and eleven in the mesentery were found. All were sutured. Blood and feces were dipped out of the abdominal cavity, which was then flushed with salt solution, a large quantity of which was left in. The wound was drained with iodoform gauze. The patient made an uneventful recovery, and was well in three weeks. In a discussion as to the value of salt solution in abdominal work Dr. Baer said that he had found it useful in operating on ruptured appendix. Dr. Gardiner stated that he always washed out the abdominal cavity as a routine measure, if there was any soiling of the peritoneum. He had also found it of use in extra-uterine cases. Dr. Harrison said that good results had been obtained both by flushing and by only wiping the peritoneum, and that there were as many opinions on the subject as there were operators. Dr. Roland emphasized the value of salt solution in obstetrical practice, and particularly the use of large quantities in eclampsia.

*Stated Meeting, held February 6, 1904.*

**Amebic Abscess of the Liver.**—Dr. Beck showed two patients with this affection, who had been admitted to the City Hospital within a week. Thirty-four cases of this condition have occurred at the City Hospital and four have recovered, two without and two with amebæ in the stools. The first patient was a man of thirty-two years, whose first attack of dysentery began in 1900. He gave a history of having drunk well water. The symptoms were frequent stools, chills, night-sweats, abdominal pains, loss of weight, edema of the feet and legs and blood in the stools. The amebæ were found and patient was started on quinine sulphate. Abscess formed and an operation was done on June 20, the liver being aspirated and then the abscess opened and drained. Two connecting cavities were found. Recovery was uneventful. Six months after operation no amebæ could be found and two and a half years have since elapsed with no return of symptoms. The second patient contracted dysentery at Fortress Monroe in 1888 and was discharged in 1890 from the army with incurable diarrhæa. In 1894, however, his health was good, but in 1901 he began to have pain in liver, nausea and vomiting, great depression with some enlargement and tenderness of the liver, but no leucocytosis. He was operated in June, and at the end of July discharged cured. About four months later there was recurrence of all the symptoms, and in December a second operation was done. This was followed by improvement, but in June amebic dysentery reappeared which responded to treatment, only to recur again.

Dr. Gamble said that the interesting point about the first case was that amebæ left the stools after the operation. Irrigations in amebic dysentery increase the danger of perforation, for death does oc-



cur in the acute stage in spite of what the pathologists say to the contrary. To avoid this danger I have been giving quinine internally in pills whose coating is undissolved until it reaches the intestines. The patients are thus cinchonized just as malarial patients are, and the good result may be due to the toxic action of quinine on the amebæ, which belong to the same family as the malarial parasite.

Dr. Earle said that he always treated his cases with irrigations of silver nitrate and quinine, and Dr. Kirby reported having seen irrigating fluid in the abdominal cavity of amebic cases post mortem. Dr. Earle stated that a rectal tube of the sort most frequently used cannot as a matter of fact be inserted and that it really catches on the rectal folds. He always gives irrigations in the knee-chest or the Sims position, and finds no difficulty in making the irrigation run in.

**Chronic Interstitial Nephritis in the Young.**—A paper was read on this subject. This condition is usually seen in connection with arteriosclerosis and hence we expect it only in the later years when the causes of arteriosclerosis have had a chance to do their work. Osler, Senator, Flint and others say that it is quite rare in children, and we would naturally expect this, inasmuch as lead poisoning, syphilis, diabetes, overeating, etc., play no important part in early years. In adults, males are affected with this form of nephritis more often than females, but in infants the case is reversed. Dickinson reported 300 cases, only one of which was under eleven years, and recently a case under fourteen years has been reported. Heubner thinks that the condition is rarely primary and always follows an acute gastritis, pneumonia or some such disease. Heredity and congenital lues may play a part, for there have been many cases showing a familiar character. Two cases were reported, the first of which was fourteen years old, and complained of bleeding from the gums. The child had poor appetite, headaches and frequent micturition, and was weak and restless. Urine contained a trace of albumin and a few casts. Death occurred three weeks after onset, and the autopsy showed an atheromatous aorta with contracted granular kidneys. The second case was eighteen years of age, and complained of frequent micturition. Her urine contained albumin, hyaline casts and a few pus cells. There was some anasarca. Autopsy showed an enlarged heart, a very small aorta and extremely contracted kidneys, the right one weighing but 18 and the left 22 grams. This relation between contracted aorta and granular kidneys has been noticed quite frequently in the literature.

#### THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Stated Meeting, held at the New York Academy of Medicine, February 8, 1904.*

**Address by the Retiring President, Dr. Andrew H. Smith.**—Dr. Andrew H. Smith delivered his farewell address. In it he stated that in the brief period since its organization the Association had attained a position such as is generally reached by similar bodies only after many years of laborious effort; indeed, it seemed almost to have sprung fully developed into existence. While he had endeavored to faithfully administer the trust placed in his hands, he recognized that the marked success of the Society had been due chiefly to its Executive Council, which gave shape and direction to the energies of the body at large, and particularly to the indefatigable efforts of the Secretary.

**A Medical Man at the Head of the Health Department.**—In closing, Dr. Smith called attention to a subject of congratulation. "For the first time since its organization," he said, "the Health Department has a medical man at its head. The insanity of our law-makers, that in express terms forbade that this should ever be the case, experienced a lucid interval at the moment when the new Charter was under revision, and now at last it is recognized that knowledge of the laws of health does not unfit a man to be President of the Health Board. . . . I am sure that I express the sentiment of the Association in felicitating the city on the one hand, and on the other, Dr. Darlington (who is a Charter Member of the Association), an esteemed member of our own profession."

**Discussion on Pancreatic Diseases.**—Dr. Thomas E. Satterthwaite, the President-elect, delivered his inaugural address. After a reference to the flourishing condition of the Association, it was devoted to the Pancreas and its Diseases, his remarks being designed as an introduction to a general discussion on this subject. Fifteen years ago, he said, we knew comparatively little that was definite about the pancreas. Since that time we have learned much, not only of its anatomy and physiology, but also of its diseases and their treatment. Much, however, is still unknown, and it is to be hoped that the discussion of this evening will set the whole matter in a clearer light. Dr. Satterthwaite gave a résumé of the work that has been done in reference to the pancreas. In the course of it, he said that the connection between pancreatic hemorrhage and acute pancreatitis appears to have been first noted by Rokitsansky, though this relation is still somewhat obscure. The two may coexist or not. In 1885 Dr. Satterthwaite presented a case at a meeting of the New York Pathological Society, where there had been a hematoma of the pancreas, without inflammation of the gland, due, as he thought then, and still thinks, to biliary salts in the blood. On the other hand, Halstead, of Baltimore, has instanced a case where there was pancreatic inflammation in association with cholelithiasis, in which a small stone had lodged in the diverticulum of Vater and diverted the bile into the pancreatic duct, causing pancreatic suppuration and hemorrhage. In 1869 an interesting anatomical discovery was made that was destined to greatly enlarge our views as to the physiology of the pancreas. Paul Langerhans, of Berlin, in his inaugural dissertation, was the first to describe certain groups of cells in the pancreas which differed from the ordinary cells of the gland, but whose nature and functions he did not determine. These cell groups or isles are now known as the Islands of Langerhans. It remained for Opie, of Baltimore (1903), to show that if the islands of Langerhans are intact, no sugar appears in the urine. In this connection, however, the English surgeons Mayo, Robson and Moynihan, hold that while extirpation of the whole pancreas produces diabetes in a large number of instances, there may be diabetes without apparent pancreatic disease, and, on the other hand, chronic interstitial pancreatitis without diabetes. Furthermore, the experiments of Ssobelou (1902) are interesting. He destroyed the gland *in situ* (as he thought) in animals, by Claude Bernard's method, but glycosuria did not occur. The query then was, Did he actually destroy the gland in its entirety? If so, some other gland must be competent to act vicariously for the pancreas. Having paid some attention to the subject of fat necrosis, he went on to say that it was difficult to do justice to all the men, indeed, all the Americans, who have aided in the advancement of our knowledge of pancreatic diseases and their treatment. In 1886 Senn, of Chicago, gave a masterly review of the surgery of the pancreas, and laid down rules for operative procedures which

have had wide recognition. In 1889 Lund, of Boston, demonstrated the possibilities of surgery in acute pancreatitis by a successful operation (said to be the fifth successful one), in a case of pancreatic abscess and fat necrosis. In the same year Fitz, of Boston, in his Middleton Goldsmith lecture, delivered in this Academy building a classical paper on pancreatic hemorrhage, and the various forms of acute pancreatitis that brought the subject of pancreatic diseases prominently before the medical profession everywhere. As yet, it is a matter of regret that medical treatment, other than palliative, offers so little hope. Fortunately, however, there is ground for belief that even in the acute form spontaneous cures may take place. Chronic pancreatitis is more amenable to treatment, because the signs are more distinct and there is more time to study them. After the acute symptoms have been relieved by the medical attendant, and surgical intervention has been decided upon, the prognosis for an operation is fairly good. So far as the diagnosis of pancreatic disease is concerned, it is well known that there are many difficulties and many failures, especially in the acute form. It is difficult certainly to contra-distinguish pancreatic disease from peritonitis, interstitial obstruction, cholelithiasis, gastric or gastro-intestinal tumors or ulcers. Still there is no doubt that we are making progress every year.

**Advances in the Physiology of the Pancreas and their Application to the Diagnosis of the Diseases of the Pancreas.**—Dr. John C. Hemmeter, of the University of Maryland, spoke on this subject. Exact physiological knowledge concerning the functions of the pancreas, he said, dates from the discovery by Claude Bernard, in 1848, that the secretion of this organ is capable of digesting fats. In 1857 Corvisart ascertained that it has the power of digesting proteid material. Having referred in passing to the work of other investigators, he spoke particularly of the epoch-making discoveries of von Mering and Minkowski, who, in 1889, demonstrated that diabetes can be experimentally produced in the dog by extirpating the pancreas, and that the appearance of sugar in the animal's urine is accompanied by all the characteristics of glycosuria, as it occurs in the human being. On the basis of numerous investigations into the pathological histology of the pancreas in cases of diabetes it was established that many cases of this type of disease are due to atrophy, fatty degeneration, and tumors of the pancreas. Degenerations of the islands of Langerhans have been particularly associated with diabetes, but the fact must be emphasized that in some instances of very severe diabetes no changes whatever were demonstrable in the pancreas. Pearce has recently furnished confirmatory evidence from the human embryo that the islands of Langerhans, though originating through a proliferation and differentiation of the cells of the primitive secreting tubules of the pancreas, eventually become wholly independent structures anatomically. On the basis of physiology, histology, pathology and embryology, therefore, the pancreas, as it now appears, represents an organ within an organ—a duplex structure with, first, a function to the interior, and, second, to the exterior, the intestinal canal being practically outside the body proper. The islands of Langerhans, which are not concerned in the elaboration of the pancreatic ferment, are identified with the first, and have been shown to exert an influence upon the carbohydrate metabolism, probably by an internal secretion. The glandular parenchyma, on the other hand, is concerned with an external secretion, the digestive pancreatic juice. It is undoubtedly a fact that none of its functions belongs exclusively to

the pancreas, so that all of them are capable of being performed vicariously by other organs (the stomach and intestine). Pearce has laid emphasis on the fact that the cells of the islands of Langerhans give evidence of a remarkable resistance to degenerative processes. This makes it conceivable that we may eventually succeed in destroying the digestive or ferment-producing cells in a living animal and leaving the islands of Langerhans intact. It has occurred to Dr. Hemmeter that possibly this might be produced by the pancreatic juice itself, or by inducing an autolysis of the digestive cells of the pancreas through the influence of its own digestive ferment. In an autopsy on a case of diabetes which had recovered from the symptoms of glycosuria, but had eventually succumbed to consequences of cholelithiasis, he observed a partial autolysis of the glandular apparatus of the pancreas, whereas the islands of Langerhans did not appear to be diseased. At present the diagnosis of pancreatic diseases must depend more upon the clinical data than upon the results of chemical researches in the laboratory. There are three requisites which conservative clinicians should demand of all published assertions concerning the clinical pathology of the pancreas: (1) A concrete and precise account of the objective and subjective signs and symptoms. (2) Quantitative and qualitative chemical analyses of feces, blood and urine after the ingestion of weighed amounts of proteids, carbohydrates and fats, preferably each given alone. (3) Accurate description of the findings that are discoverable either at operation or at autopsy. In conclusion, Dr. Hemmeter stated that his principal aims on this occasion were (a) to point out the possibility of separating the islands of Langerhans (concerned in control of carbohydrate metabolism) from the part of the pancreas concerned in the secretion of the digestive juice, and (b) to demonstrate that active proteolysis may take place in the intestinal canal in the entire absence of pancreatic secretion.

**Experimental Researches.**—Dr. Richard M. Pearce, of the Albany Medical College, said that the pancreas lends itself to experiment perhaps more readily than any other organ of the body. Among the researches undertaken have been many to determine the injury caused to it by various irritating substances. These give rise to inflammation characterized by necrosis and to hemorrhagic pancreatitis. It is possible on the present occasion to consider the effects of but four of these irritants. (1) The action of a ferment. It is a question whether it is possible to produce pancreatic hemorrhage (apoplexy) without inflammation. Probably hemorrhagic pancreatitis always results. As to the order of the phenomena, hemorrhage, necrosis and inflammation, Dr. Flexner and himself had endeavored to ascertain which of these occurred first. In their experiments all three were found at the end of one hour, and the conclusion was reached that they occur almost simultaneously. A large number of the cases of pancreatitis are associated with gangrene, but this usually occurs only as a secondary phenomenon at a late stage of the inflammation. Suppuration occupies a position by itself. While hemorrhagic pancreatitis is diffuse, suppuration is distinctly localized (in abscesses). In the hemorrhagic and gangrenous pancreatitis there occurs a form of inflammation different from that met with in other organs, but suppuration in the pancreas is the same as observed elsewhere. Fat necrosis is a common complication of pancreatitis. (2) Action of bacteria. This is apparently secondary. (3) Action of gastric juice. In the experiments artificial gastric juice was employed. In man there is no evidence that irritation by the gastric juice can take



place. (4) The relation of bile to acute pancreatitis. Proof has been furnished that bile entering the pancreatic duct may give rise to hemorrhagic pancreatitis. In the experiments conducted by Dr. Flexner and himself, however, only a very small proportion of cases of cholelithiasis were complicated by pancreatitis. The old classification of pancreatitis by Fitz into hemorrhagic, gangrenous and suppurative, seems to answer all purposes. As all these varieties are accompanied by more or less necrosis, it is hardly necessary to add a fourth variety.

**Pathology.**—Dr. George P. Müller, of the University of Pennsylvania, described the lesions observed in the acute and chronic forms of pancreatitis and the relation which such lesions bear to the question of diagnosis. Acute pancreatitis, he said, with its fearful rapidity of progress and great mortality, presents but few lesions. They are essentially those of a peritonitis in the upper abdomen, with varying lesions in the gland itself, and often diffused fat necrosis, which may extend to the epiploic appendages of the sigmoid or to the meso-appendix on the right. Destruction of the parenchyma of the pancreas ensues, and one of two types of disease presents itself. Acute hemorrhagic pancreatitis is an affection peculiar to the pancreas and undoubtedly due to the complexity of the ferments and of the internal secretion. The impaction of a gall-stone more nearly explains the sudden onset than any other. The pancreatic secretion, acting upon cells injured by retained ferments, infection, etc., causes areas of necrosis and hemorrhage which may eventually involve the entire gland. An inflammatory reaction, marked by the presence of large numbers of polynuclear leucocytes, is present from the beginning. In microscopical sections of the pancreas the interacinous, interlobular and peripancreatic tissue is seen infiltrated with blood, and the intact blood-vessels distended, with walls swollen and cloudy. The acini, if identified, are barely discernable, their nuclei are lost, and the cells are granular and cloudy in appearance. In various areas the destruction of the gland becomes total, and nothing can be discerned, except a structureless granular debris. In gangrenous pancreatitis, the termination of the acute lesion, the organ is large, friable and slate-brown or purple in color, and upon section presents a mottled red and black appearance, with no visible evidence of any structure, except perhaps the duct of Wirsung. In suppurative pancreatitis, which is due to infection by bacteria, the pus is observed as multiple small abscesses or metastatic deposits, distinguishing this form from the hemorrhagic disease with infiltration and diffusion of the leucocytes into the already formed necrotic tissue. The abscess, if large, may open into the peritoneal cavity—more rarely externally; and, if primary in the pancreas, may infect the portal vein and liver. Fat necrosis is an interesting chemical reaction by which the pancreatic ferment, by virtue of its fat-splitting element, infiltrates the fat in the peritoneal cavity, and induces specks of necrosis followed by the production of the crystalline calcium salts. At the present time the appearance of these scattered white points in the mesentery and omentum, when the abdomen is opened at operation, must be considered as indicating a grave lesion in the pancreas and a probable fatal termination. The peritoneum is variously affected by acute pancreatitis, and sometimes there is present a true and often diffuse peritonitis, especially when the pus in the suppurative form has broken into the peritoneal cavity. Chronic pancreatitis is of immense importance at the present time by reason of the brilliant prospect which surgery offers in the cure of a disease long believed to be incurable, and frequently confused, in diagnosis,

with malignant disease. The pancreas parallels the liver in a fairly close manner when attacked by chronic indurative inflammation, though the lesions observed have a more direct bearing upon the clinical findings. Having spoken of the etiology and microscopical appearances, Dr. Müller described a case in which pancreatic calculi completely obstructed the duct of Wirsung and the gland was in a state of complete atrophy. Pancreatic calculi, he said, have rarely been diagnosed during life, and only once has such diagnosis been followed by operation. As a result of the obstruction of the pancreatic ducts by the calculi, the parenchyma suffers, an interlobular pancreatitis occurs, and atrophy of the gland is the result.

**Classification and Symptomatology.**—Dr. Charles G. Stockton, of the University of Buffalo, said that the classification of diseases of the pancreas was especially difficult, partly because of the incompleteness of our knowledge of the pathology and partly because the pancreas secretes certain enzymes or other active principles which, in the presence of disease, lead to peculiar and remarkable changes, both in function and structure. Tumors of the pancreas occur, as carcinoma of various kinds, adenomata, tuberculosis, syphilis, and cysts, the last presenting at least three varieties: retention cysts, proliferation cysts, and hemorrhagic cysts. Chronic pancreatitis is usually described as induration, although fatty degeneration and fatty ingrowth often form a considerable part of the mass. We have come to accept two forms of distribution of the fibroid degeneration, one the ordinary interlobular type, the other characterized by diffuse proliferation of the interacinous tissues, which invades the islands of Langerhans and apparently constitutes the structural change upon which pancreatic diabetes depends. When the induration involves the head of the pancreas it may, from pressure, obstruct the common bile duct and give rise to phenomena, which suggest malignant growth or cholelithiasis. If the choledochus escapes, there may still ensue symptoms of more or less importance, depending upon interruption of the pancreatic function. These are glycosuria (persistent if the disease invades the islands of Langerhans), the signs of interstitial indigestion, and, occasionally, fatty stools, lipuria, sialorrhea, emaciation, and, it may be, severe anemia. Given a palpable induration in the region of the pancreas and disturbance of intestinal digestion, with, at times, traces of sugar and albumin in the urine, with or without increased salivation, fatty stools, or lipuria, and depreciation in general health, without the cachexia of cancer, then one may make a provisional diagnosis of chronic indurative pancreatitis. Having referred to the classification of inflammatory diseases of the pancreas given by various authors, he said it did not seem to be satisfactory to attempt the explanation of acute pancreatic processes along the line of ordinary inflammation. In some instances an inflammatory reaction is evident; in others it is entirely lacking. What is present in all cases is the escape of pancreatic secretion into the tissue and the consequent necrosis of the pancreas and surrounding parts, accompanied by hemorrhage, liquefaction necrosis, and fat necrosis. While it is admitted that these phenomena may be excited by an inflammation of the organ, the fact must not be lost sight of that there are cases free from infection, and therefore inflammation, as that term is used at the present day. In the so-called hemorrhagic pancreatitis *no* pus whatever is found, but suppurative pancreatitis, due to infection, follows a different course. The symptomatology of acute hemorrhagic pancreatitis and that of hemorrhage into the pancreas are very closely related. In the onset there are intense pain in the lower part of

the epigastrium, manifestations of shock, and generally nausea and vomiting. These symptoms may continue for a few hours or days, and then subside. Not infrequently the pain diminishes, but the prostration continues, vomiting recurs, and the temperature is raised from one to three degrees. The abdomen is slightly distended, and there is increased resistance in its upper half, where there is also more or less marked tenderness. The bowels are usually somewhat sluggish, but lack the motor paresis of peritonitis. The symptoms are increased by movements of the body, and yet there is not the disinclination to change position observed in cases of peritonitis. In a few instances slight transient glycosuria appears, and traces of albumin in the urine are to be expected. Patients may continue in this condition for several days, or even weeks, and spontaneous recovery may possibly occur. More, often the process continues for a few days without marked change, when somewhat suddenly the prostration increases, the pulse becomes almost imperceptible, and death results apparently from abdominal shock. When suppuration is associated with hemorrhagic pancreatitis, we find added to the symptoms of the latter those of septicemia. In other cases of suppurative pancreatitis the manifestations are often merely those of suppuration in the upper part of the abdomen, and the element of shock may be less marked than in the hemorrhagic form of the disease. Leucocytosis is to be expected in suppurative cases, but is inconspicuous or absent in those of other types. Fat necrosis occurs in most, but not all, acute processes of the pancreas, whether suppurative, necrotic or inflammatory.

**Prophylaxis and Medical Treatment.**—Dr. Glentworth R. Butler read a paper on this branch of the subject. This paper will appear in full in a subsequent issue of the MEDICAL NEWS.

**Surgical Treatment of Pancreatitis.**—Dr. John B. Deaver, of Philadelphia, said that the indications for operation in acute pancreatitis are furnished by the pathology of the disease and the history of the cases so far reported. The extraordinary rapidity with which death so often follows, shortly after the onset, makes any delay inadvisable; and yet, the diagnosis is so difficult and the symptoms are so ill-defined that the mortality following operation is very high. In many forms of acute pancreatitis the disease appears to be a destructive infiltration of tissues by ferment, often associated with infection, and only in those cases where local areas of pus produce necrotic foci does it limit itself. For this reason he believed that the early operation, rationally conducted, as Mikulicz expresses it, will finally give us the better results. The technic of such an operation varies with the condition present. Upon opening the abdomen, fat necrosis, if present, is a symptom of great moment, and, of course, decides the diagnosis. The gall-bladder should be palpated for calculi, and the common duct explored with the finger. The intestines and surrounding viscera must be protected by gauze pads with great care. The pancreas may be reached (1) through the gastrocolic omentum, below the stomach; (2) through the gastrohepatic omentum, above the stomach, or (3) through the transverse mesocolon, back of the colon and stomach. The first method is the most applicable for the purpose of drainage. Having cited certain points formulated by Mikulicz, he said that the bleeding in hemorrhagic pancreatitis was often hard to check, and might require the extensive use of gauze tampons or even the introduction of sutures. The latter was to be avoided, if possible. Progressive necrosis of the pancreatic cells from the action of the ferment, while not to be checked by operation, may be prevented to a great extent by free drainage. Infections from the duodenum involving the pancreas re-

quire the usual treatment for infected areas elsewhere, free incision and drainage. If the pancreas merely presents a swollen, tense, edematous appearance, and there is no marked peripancreatic involvement, an incision should be made in the long axis of the organ, extending its entire length, if necessary. Drainage to this opening, though uphill, will sufficiently provide for the serous effusion and broken-down products. When the peripancreatic involvement is severe, loin drainage is required, after free incision of the pancreas. Abscess, necrosis, and gangrene of the organ require identical treatment. Before completing the toilet of the abdomen the area of disease should be carefully walled off from the general peritoneal cavity by gauze. In cases in which the presence of stones in the gall-bladder or bile ducts is discovered the operation is considerably complicated, as the incision is too far to the left for the best performance of cholecystostomy. The surgery of chronic pancreatitis has been made in recent years. After alluding to the work of Senn, published in 1886, Dr. Deaver said it was principally to Mayo Robson that we owe the impetus given to the surgical treatment of chronic inflammatory enlargements of the head of the pancreas. He then gave a résumé of the essential lesions of chronic disease from the standpoint of surgery, and went on to say that the cause of the disease must be removed, if a biliary or pancreatic stone, and temporary or permanent drainage of the bile provided for. Most surgeons prefer the external opening, or cholecystostomy, and the great advantage of the latter method is the ability to keep the drainage under constant observation. When the stone is located as being in the ampulla of Vater, it is best to open the duodenum and slit up the papilla, such a procedure not requiring any suture to reclose the duct. A choledochotomy is required if the calculus is in some other position. Pancreatitis without stone is frequently completely relieved by a simple cholecystostomy. When there is glycosuria without obstruction of the biliary apparatus, great relief may be afforded by a cholecystostomy, but theoretically an operation offers no hope for cure, as the diseased islands of Langerhans are not dependent on any lesion ascending through the ducts. In cases with obstruction of the pancreatic duct by a calculus the operation required depends upon the location of the latter, and while it may be reached by opening the papilla and duct through the duodenum, the operator must be prepared to open the lesser peritoneal cavity and cut down through the gland itself. The operative procedure in pancreatic cysts will depend upon the degree of adhesion to surrounding structures. In only a small proportion of cases can the cyst be dissected out. Aspiration of the cyst should be performed only when the patient is severely ill from diabetes or the effects of pressure. Whenever practicable, the abdomen should be opened by a median incision above the umbilicus, and through either the gastrocolic omentum or the transverse mesocolon; after which the contents of the cyst should be withdrawn by an aspirator, the puncture being closed with one or more hemostats, as the needle is removed. The cyst wall is then drawn to the wound, sutured to the parietal peritoneum, and drained. When the cyst is small and cannot be brought to the abdominal wound, a rubber drainage-tube should be introduced into the cyst cavity, surrounded by gauze packing to prevent leakage.

Dr. HOWARD C. RUSSELL of the United States Marine Hospital Service died Wednesday at the Marine Hospital, at Stapleton, S. I., from pneumonia. He was born at Washington, D. C., and was educated and obtained his medical degree at the University of Pennsylvania. He was appointed to the Marine Hospital Service on July 1, 1897.



## BOOK REVIEWS.

**THE PREVENTION OF CONSUMPTION.** By ALFRED HILLIER, M.D., C.M., B.A., Secretary to the National Association for the Prevention of Consumption (London), etc. Revised by Professor R. Koch. Longmans, Green & Co., London, New York and Bombay.

IN his introduction to Dr. Hillier's book Professor Koch says: "In all respects it represents the latest scientific views, which are so clearly expounded that every intelligent reader can derive reliable instruction from them. A special merit of the author is that in dealing with points still matters of controversy in the science of tuberculosis he handles them with such skill that the true value of varying opinions is shown." This is high praise from the best authority. We think that readers of the book will find it not undeserved. Nowhere else can one find crowded into 200 small pages so much that is practical and thoroughly up to date with regard to tuberculosis. The compression necessary has been accomplished with special success, though we think that it might have been longer as regards certain details of prophylaxis, with addition to its value.

**THE SELF-CURE OF CONSUMPTION WITHOUT MEDICINE.** With a Chapter on the Prevention of Consumption and Other Diseases. By CHARLES H. STANLEY DAVIS, M.D., Ph.D. Member of the Connecticut State Medical Society, etc. E. B. Treat & Co., New York.

WE have one fault to find with this little book, valuable in other ways, and that is a fault common to a number of recent publications with regard to tuberculosis. It appears to make the cure of consumption almost too easy, and there is apt to be the feeling created among incipient consumptives that after all they are not suffering from a very serious condition. This may easily lead to neglect of the rather severe regimen that any consumptive must accustom himself to carry out if he is going to obtain a cure of his disease. Otherwise the book contains many valuable hints put in a very practical way.

**THE PATHOGENIC MICROBES.** By M. LE DR. P. JOUSSET, Physician to the Hospital St. Jacques, Paris. Authorized translation by HORACE P. HOLMES, M.D. Boericke & Tafel, Philadelphia.

WE scarcely see any reason why this little book should have been translated into English. We have a number of volumes by American authors that cover just the same ground and seem to be quite as well done. Dr. Jousset's book is a good little hand-book as compends go. It is scarcely more than this. We venture to say that there are at least half a dozen volumes almost as compendious and quite as valuable otherwise as this.

**THE BLUES (Splanchnic Neurasthenia). Causes and Cure.** By ALBERT ABRAMS, A.M., M.D. (Heidelberg). F.R.M.S. Consulting Physician Denver National Hospital for Consumptives, etc. E. B. Treat & Co., New York.

DR. ABRAMS' little book of nearly 250 pages gives an excellent idea of some of the varying phases of the neurotic conditions popularly termed "the blues." In the summary of his first chapter he says that "an attack of the blues is an attack of acute neurasthenia or an aperiodic aggravation of chronic nervousness. Heredity may be responsible for the susceptible nervous system, and it devolves on the individual to obey the laws of hygiene and to avail himself of momentary advantages, however minute, to withstand the effects of conditions which either weaken or improve the status of his vitality."

There are a number of very practical points with re-

gard to the varying phases of the disease, and the various chapters are summarized very interestingly. The book would well stand more condensation, but still is worth reading, especially for those who have much to do with the idle rich, with so much time on their hands that the blues become a frequent source of annoyance.

**MANUAL OF MEDICINE.** By THOMAS KIRKPATRICK MONRO, M.A., M.D. Fellow of and Examiner to the Faculty of Physicians and Surgeons, Glasgow, etc. W. B. Saunders & Co., Philadelphia and New York.

THIS work has at least the distinctive character sometimes missed in text-books on medicine of giving due credit to the men to whom the author is indebted for much help in the compilation of his book. As Americans we are pleased to find in conjunction in his expressions of indebtedness such names as Sir William Gowers, Sir William Broadbent, Dr. Sansom and our own Professor Osler. Altogether the book contains some 900 pages, and will undoubtedly be useful to students. The author hopes also that it will be of service to junior practitioners. Personally we should be very much better pleased if both students and junior practitioners of medicine early acquired the habit of consulting some more extensive standard work well known as an authority on various subjects, which would eventually become a companion with a definite place in local memory for problems previously solved by means of it. We think that this book is as good as any can be made with such condensation as is necessary under these circumstances, though we are inclined to deprecate the making of many manuals which must find a place somewhere between the compend intended merely to help the student's memory and the text-book, which should become a familiar and loving companion.

**THE HOSPITAL FORMULARY of the Department of Public Charities and the Department of Bellevue and Allied Hospitals of the City of New York.** Sixth Revised Edition. W. E. DREYFUS, A.B., Ph.D., Editor, New York.

THIS volume, very substantially bound in leather, constitutes an important addition to any physician's working library. As much as possible formulæ of a similar nature have been brought together, so as to avoid the necessity for frequent reference to the index. An addition special to this revision is an index of diseases for which the formulæ are usually employed. This will undoubtedly prove, as the chemist of the Department of Public Charities suggests, a valuable feature for younger physicians at least. The book is an excellent sample of the sort of work that has been done in the last few years in the Department of Public Charities, and the preface closes with the request for notifications as to alterations or additions desired in future additions, that shows a commendable willingness to make the formulary even more valuable, if possible, in the future.

**INTERNATIONAL CLINICS.** A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, etc. By Leading Members of the Medical Profession Throughout the World. Edited by A. O. J. KELLY, A.M., M.D., Philadelphia, U. S. A. With Regular Correspondents in Montreal, London, Paris, Berlin, Vienna, Leipzig, Brussels and Carlsbad. Volume 4, Thirteenth Series. J. B. Lippincott Company, Philadelphia.

THE present volume of the International Clinics, which closes the first year under the new editorship, shows that the improvement manifested in the character of the contents of the Quarterly has been continued.

Perhaps there is to be noted, however, a tendency to overspecialization, which will deter the general practitioner readers of the periodical. There are excellent medical articles, however, on the Importance for Students of Physiognomical Diagnosis in Disease, by Sir Dyce Duckworth, of London; on Some Clinical Aspects of Diseases of the Kidneys, by Henry Baird Favill, of Chicago; and on The Parallelism Between the Clinical Symptoms and the Pathological Lesions of Rheumatic Fever, by F. J. Poynton, of London.

Very timely articles on treatment are those on the Treatment of Croupous Pneumonia, by John H. Musser, of Philadelphia, and the Treatment of Chronic Bronchitis, by Thomas A. Claytor, of Washington. Dr. Musser insists especially on the individualization of treatment, though he gives many precise practical directions and various drugs that may be employed with advantage in the treatment of this disease. For those who wish to realize the present state of medical knowledge regarding the subcutaneous use of mercury in the treatment of syphilis, Professor Julien, of Paris, has written an excellent review, historical and evolutionary, of this use of mercury. There is much more in it than is usually supposed by those who have been accustomed to prescribe mercury only by the mouth, and in the severer cases, especially this form of treatment, it would seem, must be ready at hand if the medical practitioner would do his whole duty by his patients.

**NINETEENTH ANNUAL REPORT OF THE BUREAU OF ANIMAL INDUSTRY**, United States Department of Agriculture, for the year 1902. Government Printing Office, Washington.

THIS annual report always contains some material interesting to physicians and especially to bacteriologists. In the present volume there are articles on scabies in cattle, the duration of the life of the tubercle bacillus in cheese; statistics of oleomargarine, oleo oil and filled cheese; bovine tuberculosis and other animal diseases affecting the public health; foot and mouth disease, Voges' description of *mal de cadenas*, a South African trypanosomatic disease of domestic animals; contagious diseases of animals in foreign countries, and a report on the tuberculin test of cattle in Great Britain. As these articles are written by such experts as D. E. Salmon, Charles Wardell Stiles, R. W. Hickman, there is no doubt that the details presented can be absolutely depended on and they may prove of value in the study of analogous diseases in human beings.

**COMPEND OF PATHOLOGY**, General and Special, a Student's Manual in one volume. By ALFRED EDWARD THAYER, M.D., Professor of Pathology, University of Texas. Second Edition. P. Blakiston's Son & Co., Philadelphia.

In his preface Dr. Thayer says that the two compends of pathology issued by him in 1902 are here presented in a second edition as one volume. A special chapter on the nervous system has been added and the text thoroughly revised. The book is meant for students and is certainly a handy volume, containing a great deal of valuable material in its seven hundred odd pages. It is, however, beyond the range of a compend and yet scarcely a textbook. It is not easy to understand the position that it will occupy in medical literature except as a book for students to have and consult for examination and recitation purposes, which in later editions will become a full-fledged text-book. It seems almost too bad that students should not become familiar during their college days with some classical complete text-book, rather than a makeshift meant only for the passing years of school life.

**MAMMALIAN ANATOMY**. With Special Reference to the Cat. By ALVIN DAVISON, Ph.D., Ex-Fellow of Princeton University; Professor of Biology in Lafayette College. P. Blakiston's Son & Co., Philadelphia.

THIS little book is an excellent compendium of mammalian anatomy as it can best be studied outside of medical schools. The cat has frequently been used as a type of the mammal and this guide seems to be concise yet complete and very well illustrated. The compression has been especially well done, for in spite of brevity there is very little that is important in mammalian anatomy that is not to be found within its covers. The harmless, necessary cat makes an excellent substitute for the higher mammal and the opportunities afforded by its structure have been well taken advantage of.

**ANNUAL REPORT OF THE HEALTH OF THE IMPERIAL NAVY FOR THE YEAR, 1901**. Tokyo.

If the present volume is an index of the administrative control existing throughout the Japanese navy there is no reason to believe that this department of the Mikado's fighting force is less intelligently or efficiently organized than that of any other world power. This report is a model of its kind and presents the health statistics of the imperial navy tabulated from every conceivable point of view. The mean daily force of the service for the year 1901 was 26,469 and the number of patients treated for the year was 24,870, which is in the ratio of 942.76 per 1,000 of force. As this figure shows a decrease of 36.63 per 1,000 over the preceding year the "chief of Bureau of Medical Affairs," Baron Saneyoshi, F.R.C.S., Eng., H.M., is no doubt pleased with the work of his staff.

**THE TREATMENT OF NEURASTHENIA**. By A. PROUST, Professor in the Faculty of Medicine of the University of Paris, and GILBERT BAILLET, Professor Agrégé of the Faculty of Medicine of Paris. Translated by PETER CAMPBELL SMITH, Laureate of the Royal College of Physicians of Edinburgh. Edward R. Pelton, New York.

THIS little book is a very popular manual of the treatment of the hydra-headed symptom complex of neurasthenia, as formulated in France. It has been before the American medical public for some time and has deservedly gained a reputation for itself, for its thoroughly practical character. The chapter on the prophylaxis of neurasthenia is the best in the book. The chapter on moral education, particularly, will be helpful to those who want to prevent neurotic growing children from becoming adult neurasthenics. The concluding chapters on neurasthenia in women and genital neurasthenia are excellent compends of difficult subjects.

## BOOKS RECEIVED.

*The Medical News acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the Medical News will shortly appear.*

**A HANDBOOK ON THE PREVENTION OF TUBERCULOSIS**. Published by the Charity Organization Society of the City of New York. 8vo, 388 pages. Illustrated. New York.

**NON-SURGICAL TREATISE ON DISEASES OF THE PROSTATE GLAND AND ADNEXA**. By Dr. G. W. Overall. 8vo, 205 pages. Illustrated. Marsh & Grant Co., Chicago.

**ANNUAL REPORT OF THE SUPERVISING SURGEON GENERAL OF THE MARINE HOSPITAL SERVICE OF THE UNITED STATES, FOR THE FISCAL YEAR 1900-1901**. Two volumes. Government Printing Office, Washington, D. C.